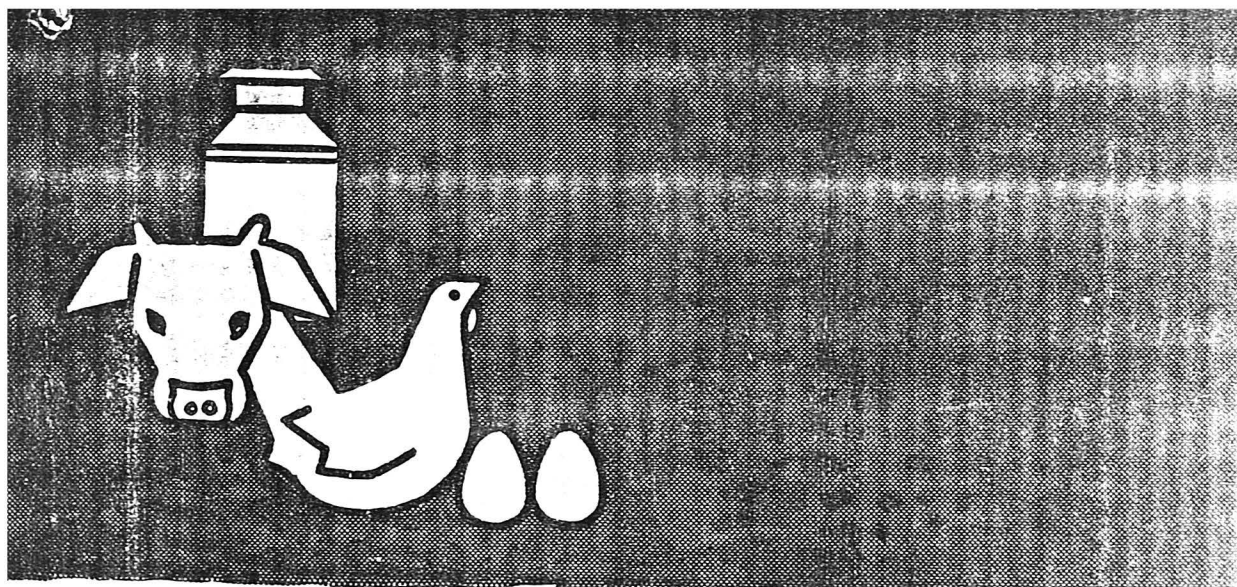




GOVERNMENT OF MAHARASHTRA

**REPORT ON**  
**MILK, EGG, WOOL AND**  
**MEAT PRODUCTION**  
**AND**  
**LIVESTOCK AND POULTRY**  
**KEEPING PRACTICES IN**  
**MAHARASHTRA STATE**  
**FOR THE YEAR 1989-90**



DIRECTORATE OF ANIMAL HUSBANDRY  
MAHARASHTRA STATE  
PUNE-411 001.

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X REPORT ON X  
X MILK, EGG, WOOL AND MEAT PRODUCTION X  
X AND X  
X LIVESTOCK AND POULTRY KEEPING PRACTICES X  
X IN X  
X MAHARASHTRA STATE X  
X FOR THE YEAR 1939 - 90 X  
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RECTORATE OF ANIMAL HUSBANDRY  
MAHARASHTRA STATE  
PUNE - 411 001.

## P R E F A C E

The Department of Animal Husbandry, Maharashtra State, has launched an Integrated Sample Survey Scheme, since 1970-71, to study the annual status of the major Livestock Products and Livestock and Poultry Keeping Practices, followed in the State. So far, nineteen such annual surveys have been conducted in the State in succession. The present report is based on the findings of the twentieth annual survey in the series.

The report contains information on Milk, Egg, Wool and Meat Production estimates in the State, during 1989-90. It also contains information about feeding and management practices followed in livestock and poultry, utilisation pattern of Livestock Products, Mortality rates of Livestock and Poultry etc.

The success of this Survey goes to the field staff as well as the office of the Integrated Survey Scheme. We are also grateful to the Indian Agricultural Statistics Research Institute, New Delhi for providing the Sampling technique for the Survey.

It is hoped that the findings of the survey will be useful to the planners, administrators and for those interested in Animal Husbandry and Dairying. The results of the Survey are given at the beginning of the Report in the form of "RESULTS AT A GLANCE" for the sake of convenience.

Place : Pune - 411 001

Dated : 19th June, 1991

V. P. RANE

Director of Animal Husbandry  
Maharashtra State, Pune-1.

Some salient results at a glance from the survey on production of Milk, Egg, Wool and Meat and study of livestock and poultry keeping practices in Maharashtra State during the year 1989-90

Sr.No.	Item	Unit	Figure
1.	2.	3.	4.
<u>1. Size of sample observed :-</u>			
i)	Districts observed	No.	30
ii)	Villages observed	"	570
<u>2. Characteristics of villages:-</u>			
i)	Having bovine	%	100.0
ii)	Having poultry	"	97.3
iii)	Having sheep	"	18.6
iv)	Having goats	"	94.9
v)	Average no. of households per village	No.	182
<u>3. Households rearing :-</u>			
i)	Bovine	%	60.98
ii)	Poultry	"	32.20
iii)	Sheep	"	0.91
iv)	Goats	"	25.43
v)	No Livestock & Poultry	"	22.15
<u>4. Availability of facility for Veterinary Aid :-</u>			
i)	Within village	%	7.4
ii)	Upto 5 Kms.	"	52.4
iii)	Average distance of Vety. Aid	Kms.	6.1
<u>II) MILK PRODUCTION AND BOVINE KEEPING PRACTICES :-</u>			
<u>1) Size of sample observed :-</u>			
i)	Bovine keeper households	No.	10010
ii)	Bovine observed for detailed Study	"	40267
<u>iii) In-milk animals for milk recording :-</u>			
a)	Cows	No.	8418
b)	Buffaloes	"	5131

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5.	Estimated no. of in-milk and milch animals	16
6.	Estimated Milk Production	25
7.	Feeding practices in Bovine	37
8.	Production and Utilisation of Dung	42
9.	Mortality in Bovine	43
10.	Estimated no. of Layers and Egg Production	46
11.	Mortality in Poultry	52
12.	Estimated Wool Production	58
13.	Estimated Goat Milk Production	60
14.	Estimated Meat Production	64
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1.	2.	3.	4.	1.
2.	Estimated No. of in-milk animals :-	:		7. Av
i)	Cows in-milk :-			fc
a)	Deshi	: Lakhs	21.26	(in
b)	Crossbred	: -do-	3.01	in
c)	Total	: -do-	24.27	a)
ii)	Buffaloes in-milk	: -do-	14.51	
iii)	Goats in-milk	: -do-	26.48	b)
3.	Average daily milk yield per animal in-milk :-	:		
i)	Cow :-			
a)	Deshi	: Kg. (Litre)	1.179 (1.145)	8. Av
b)	Crossbred	: -do-	6.221 (6.051)	ec
c)	Overall	: -do-	1.805 (1.756)	b
ii)	Buffalo	: -do-	2.816 (2.739)	9. E
iii)	Goat	: -do-	0.183 (0.178)	d
4.	Estimated annual milk production:-			10. A
i)	Cow milk :-			i
a)	Deshi	: Lakh kg. (Lakh ltr.)	9149.10 (8899.33)	ii
b)	Crossbred	: -do-	6836.63 (6649.70)	III) E
ii)	Buffaloe milk	: -do-	14909.33 (14502.30)	K
iii)	Goat milk	: -do-	1767.28 (1719.03)	
iv)	Total	: -do-	32662.34 (31770.66)	
5.	Per capita per day availability of milk :-			
a)	Cow + Buffalo	: Gm.	117	
b)	Cow + Buffalo + Goat	: -do-	123	
6.	Feeding practices of Bovine :-			
i)	Cattle kept on grazing alone:	%	14.7	
ii)	Buffaloes kept on grazing alone	: -do-	11.3	

1.	2.	3.	4.
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7. Average quantity of feed/ fodder fed per day per animal (including animals kept on graz- ing alone also):-			
a) Cattle :-			
i) Green	Kg.		2.569
ii) Dry	-do-		3.471
iii) Concentrate	-do-		0.169
b) Buffaloes:-			
i) Green	-do-		2.993
ii) Dry	-do-		3.808
iii) Concentrate	-do-		0.452
8. Average quantity of dung coll- ected in cattle and shed per bovine per day		-do-	3.136
9. Estimated annual quantity of dung collected		1000 M.T.	27756
10. Annual mortality in bovine :-			
i) Cattle	%		1.47
ii) Buffalo	-do-		3.88

III) EGG PRODUCTION AND POULTRY  
KEEPING PRACTICES :-

1) <u>Size of sample observed:-</u>			
i) Total poultry keeper households	No.		18776
ii) <u>Total poultry birds :-</u>			
a) Cocks	-do-		11149
b) Hens	-do-		64039
c) Cockerels	-do-		11352
d) Pullets	-do-		15597
e) Chicks	-do-		49751
f) Total	-do-		151888
2) <u>Estimated no. of layers :-</u>			
a) Deshi	Lakhs		81.70
b) Improved	-do-		38.97
c) Total	-do-		120.67
3) <u>Average no. of eggs laid per: layer per year :-</u>			
a) Deshi	No.		117
b) Improved	-do-		257

1.	2.	3.	4.
4. <u>Estimated annual egg production :-</u>			
a) Deshi	:	Lakh	9539.88
b) Improved	:	-do-	10026.00
c) Total	:	-do-	19565.88
5. Per capita per annum availability of eggs	:	No.	27
6. <u>Average number of poultry birds per 100 poultry keepers:-</u>			
a) Cocks	:	No.	59
b) Hens	:	-do-	341
c) Cockerels	:	-do-	61
d) Pullets	:	-do-	83
e) Chicks	:	-do-	265
f) Total	:	-do-	809
* 7. Average feed supplied per poultry bird per day	:	Gm.	27
8. Annual mortality in poultry	:	%	11.5
IV) <u>WOOL PRODUCTION AND SHEEP REARING PRACTICES :-</u>			
1. <u>Sample size observed for detailed study :-</u>			
a) No. of flocks	:	No.	257
b) No. of sheep	:	-do-	7591
2. <u>Estimated no. of sheep :-</u>			
i) Rams/wethers	:	Lakh	2.59
ii) Ewes	:	-do-	19.11
iii) Lambs	:	-do-	7.27
iv) Total	:	-do-	28.97
3. <u>Estimated no. of sheep shorn :-</u>			
i) Rams/wethers	:	-do-	2.53
ii) Ewes	:	-do-	18.82
iii) Lambs	:	-do-	3.93
iv) Total	:	-do-	25.28
4. <u>Estimated annual wool yield per sheep shorn :-</u>			
i) Rams/Wethers	:	Kg.	0.648
ii) Ewes	:	-do-	0.596
iii) Lambs	:	-do-	0.329
iv) Overall	:	-do-	0.558



1.	2.	3.	4.
5.	Estimated annual wool production	M.T.	1411
6.	Mortality in sheep	%	6.1
<b>V) GOAT MILK PRODUCTION AND GOAT REARING PRACTICES :-</b>			
<b>1) <u>Sample size observed :-</u></b>			
i)	Goat keeper households	No.	11590
ii)	In-milk goats for milk production	-do-	13319
2)	Average daily milk yield per goat in-milk	Kg. (Ltr.)	0.183 (0.178)
3)	Goats in-milk to milch goats	%	47.6
4)	Estimated no. of goats in-milk	Lakh (No.)	26.48
5)	Estimated total goat milk production	Lakh kg. (Lakh Ltrs.)	1767.28 (1719.03)
6)	Annual mortality of goats	%	4.8
<b>I) <u>MEAT PRODUCTION :-</u></b>			
<b>1) <u>Average meat production per animal :-</u></b>			
i)	Cattle	Kg.	120.345
ii)	Buffalo	-do-	134.615
iii)	Sheep	-do-	10.777
iv)	Goat	-do-	10.250
v)	Pig	-do-	20.700
<b>2) <u>Estimated no. of animals slaughtered :-</u></b>			
i)	Cattle	Lakh	4.23
ii)	Buffaloes	-do-	2.73
iii)	Sheep	-do-	16.95
iv)	Goats	-do-	37.30
v)	Pigs	-do-	2.20
3)	Estimated annual meat production	'000' M.T.	148.695
<b>4) <u>Estimated no. of :-</u></b>			
a)	Hides	Lakh piece	7.43
b)	Skins	-do-	54.88

INTRODUCTION

The present report is based on the twenty<sup>th</sup> Annual Integrated Survey, conducted by the Department of Animal Husbandry, Maharashtra State, for estimation of annual production of major Livestock Products viz. Milk, Egg, Wool and Meat and study on the livestock and poultry keeping practices followed during the year 1989-90.

The scheme was partially strengthened during 1984-85 and accordingly the data on production of milk and eggs were collected for groups of districts as per the revised plan, suggested by the Ministry of Agriculture, Animal Husbandry Statistics Division, Government of India, New Delhi.

1.2 DESCRIPTION OF THE SURVEY :-

The survey has been conducted all over the State, during all the three seasons of the year. The State consists of 30 districts with 303 Tahsils, comprising 39,354 inhabited villages and 307 cities and towns units as per 1961 human population census.

1.3 LIVESTOCK POPULATION :-

According to 1987 Livestock Census, the Maharashtra State had 32.42 lakh livestock. This constituted 217.31 (63 percent) bovine, 91.9 lakh (27 percent) Goats, 28.73 lakh (8 percent) Sheep, 3.34 lakh Pigs and remaining 1.13 lakh were horses, donkeys and mules. The total poultry was 2.48 lakh.

TABLE NO. 1

Comparison of livestock census figures

Sr.No.	Category	Population '000' as per 1987 Census	Population '000' as per 1982 Census	% increase in 1987 over 1982 Census
1.	2.	3.	4.	5.
1.	Cattle	1,69,79	1,61,62	5.06
2.	Buffaloes	47,52	39,72	19.64
3.	Sheep	28,75	26,70	7.60
4.	Goats	91,51	77,05	19.29
5.	Pigs	3,34	3,01	10.96
6.	Total Poultry	2,47,69	1,98,44	24.82

It is seen from Table No. 1 that there is an increase in all types of Livestock as well as poultry over the previous census.

1.4 PERIOD OF FIELD WORK:

The data for the present survey was collected during all the three seasons of the year 1989-90 as shown below :-

1. Summer Season - March, 1989 to June, 1989
2. Rainy Season - July, 1989 to October, 1989
3. Winter Season - November, 1989 to February, 1990

1.5 SAMPLING PLAN :

A stratified multistage random sampling design has been ~~xxx~~ adopted for the survey. The State was divided into 12 groups each consisting of about 1 to 4 districts, which have common geographical boundaries and topographical conditions. The groups of districts are treated as strata and are ~~xx~~ as follows.

Group No.	Name of the Districts
1.	Gr. Bombay
2.	Thane, Raigad
3.	Patnagiri, Sindhudurg
4.	Nashik, Dhule, Jalgaon
5.	Ahmednagar, Pune
6.	Satara, Sangli, Kolhapur
7.	Solapur, Beed, Osmanabad, Latur

<u>Group No.</u>	<u>Name of the Districts</u>
8.	: Aurangabad, Jalna, Buldhana
9.	: Parbhani, Nanded
10.	: Akola, Amravati, Yavatmal
11.	: Wardha, Nagpur, Bhandara
12.	: Chandrapur, Gadchiroli

Cut of the total villages / towns in the State, 15 percent villages/towns were selected randomly from the 11 groups of districts, (excluding Gr. Bombay) in proportion to livestock and poultry population in these groups according to 1982 Livestock census. These villages were equally divided into 3 seasons of the year. From these villages, 20 villages were selected randomly from each group of districts and 5 nearby villages were allotted to each survey assistant, for collecting data on Milk, Egg, Wool and Meat production and rearing practices of Livestock and poultry.

The data on number of livestock and poultry was also collected from remaining 15 % of the villages from the concerned Block Development Officers of Zilla Parishads.

On the basis of data collected from 20 such villages groupwise estimates for milk and egg were ~~estimated~~ worked-out for a season. The State estimates for a season were obtained by pooling the groupwise estimates. ~~the~~ By adding 3 seasonal estimates the annual estimates for the State were worked-out. The estimated number of productive animals was based on 15 % villages data received from Panchayat Samities in addition to 20 villages from each group of districts.

/remaining

#### 1.6 PROGRAMME OF FIELD WORK :-

For collection of data regarding production and rearing practices of livestock and poultry, one Survey Assistant was allotted 5 villages selected randomly afresh for each season from a group of districts. Such 4 Survey Assistants were working in each group. For Gr. Bombay district, one Survey Assistant was working and he collected the data about milk production and allied information by visiting about 20 stalls in a month, selected randomly.

For remaining groups of districts, each Survey Assistant visited selected villages in 5 to 4 rounds and in a round he made 3 days halt, for collection of data in each selected village. During the first round, he carried-out house to house complete enumeration of livestock and poultry. After completion of enumeration, he collected data as per the norms given in Table No. 2.

TABLE NO. 2

Details of data collection

Sr.No.	Schedule No.	Type of information collected	No.of households observed per day
1.	B <sub>1</sub>	Milk production and bovine keeping practices	4/2/2
2.	P <sub>2</sub>	Egg production and poultry keeping practices	5/5/10
3.	W <sub>1</sub> ,W <sub>2</sub>	Sheep rearing practices and Wool production	3/3/3
4.	S <sub>1</sub>	Goat milk production and goat rearing practices	3/6/3
5.	T <sub>1</sub>	Meat production in households having livestock or poultry	10/20/10
6.	T <sub>3</sub>	Meat production and other by-products obtained through slaughter at District place slaughter house	

1.7 DETAILS OF DATA COLLECTED :-

In this report, tables on milk, egg, wool and meat production estimates alongwith keeping practices of livestock and poultry are presented.

Details of data collected are given as follows :-

1. Feeding practices of bovine and poultry.
2. Utilisation of milk and eggs
3. Utilisations of dung
4. Mortality in bovine, poultry, sheep and goats.

1.8 STAFF

The following staff was sanctioned under the scheme during the year under report.

TABLE NO. 3 -

Sr.No.	Name of the post	Scale	No.of posts	No.of vacancies
1.	2.	3.	4.	5.
1.	Assistant Director (MAHS, Jr.Class-I)	2200 -3700	1	-
2.	Livestock Development Officer(MAHS,Class-II)	2000 -3500	8	-
3.	Investigator	1640 -2900	3	-
4.	Statistical Assistant	1200 -2040	6	2
5.	Survey Assistant (Jr.Clerk Cadre)	950 -1500	28	2
6.	Survey Assistant (Livestock Supervisor)	1200 -1800	22	2
7.	Accountant	1200 -2040	1	-
8.	Senior Clerk	1200 -2040	2	-
9.	Junior Clerk	950 -1500	1	-
10.	Peon	750 -940	3	-
Total		-	75	6

The field data were collected by 45 Survey Assistants (1 Survey Assistant for Gr. Bombay and 4 each for remaining 11 groups of districts). Five Survey Assistants were kept as leave reserve. The Livestock Development Officer supervised the work of Survey Assistants by actually visiting the selected villages. The data so collected were scrutinised, compiled, tabulated and analysed by Statistical Assistants and Investigators. The Assistant Director was the overall incharge of the scheme for field work as well as administrative work.

The Deputy Director of Animal Husbandry(Statistics) gave valuable guidance in the conduct of survey and finalization of production estimates as well as report.

...1280/-

CHAPTER - IICHARACTERISTICS OF SAMPLE VILLAGES

2.1 During the year under report data of 570 villages were received on items such as land possessed, breeding, feeding and management practices followed and obtaining details regarding production and utilisation of milk, egg, wool and meat.

The distribution of villages having various categories of livestock and poultry is presented in Table No. 4.

TABLE No. 4DISTRIBUTION OF VILLAGES HAVING LIVESTOCK/POULTRY

Sr.No.	Season	Percentage of villages having			
		Bovine	Poultry	Goats	Sheep
1.	2.	3.	4.	5.	6.
1.	Summer	100.0	97.5	95.0	22.5
2.	Rainy	100.0	96.1	97.2	18.3
3.	Winter	100.0	98.4	92.6	14.7
	Overall	100.0	97.3	94.9	18.6

It is seen from the table no. 4 that bovine were found in all the villages, while poultry and goats were found in 97.3 and 94.9 percent villages respectively. Sheep were found in only 18.6 percent villages because sheep population is mainly concentrated in Pune division of the State.

2.2 NUMBER OF HOUSEHOLDS PER VILLAGE

During the year, Livestock and poultry were enumerated by Survey Assistants from a total of 1,03,857 households in 570 selected villages. The seasonwise distribution of these villages, according to number of households found per village is given in Table No. 5.

TABLE NO. 5

DISTRIBUTION OF VILLAGES ACCORDING TO NUMBER OF HOUSEHOLDS

Sr.No.	No. of households	Percentage of villages			Overall
		Summer	Rainy	Winter	
1.	2.	3.	4.	5.	6.
1.	Upto 50	-	0.6	-	0.2
2.	51 to 100	3.5	7.2	2.6	4.4
3.	101 to 150	27.5	31.7	23.7	27.5
4.	151 to 200	24.0	23.8	29.5	25.8
5.	201 to 250	23.5	20.0	25.8	23.2
6.	251 to 300	12.0	10.5	13.2	11.9
7.	301 to 350	6.0	3.9	4.2	4.7
8.	351 to 400	1.5	1.7	0.5	1.2
9.	Above 400	2.0	0.6	0.5	1.1
Total		100.0 (200 )	100.0 (180 )	100.0 (190 )	100.0 (570 )
Average no. of households per village		188	173	190	182

Note :- Figures in brackets indicates number of villages observed.

It is seen from the above table, that about 4.6 percent villages had upto 100 households, 53.2 percent villages had in the range of 101 to 200 households while 35.1 percent and 7.0 percent villages had from 201 to 300 and more than 300 households per village respectively. The overall average number of households per village was found to be 182.

### 2.3 HOUSEHOLDS REARING LIVESTOCK AND POULTRY :

The total enumerated households were classified according to particular kind of livestock and poultry possessed and the same is given in Table No. 6.



TABLE NO. 6

DISTRIBUTION OF HOUSEHOLDS ACCORDING TO TYPE OF LIVESTOCK AND POULTRY REARED

Sr. No.	Particulars	Percentage of households rearing					
		Bovine	Poultry	Goats	Sheep	Livestock /Poultry in combi- nation	No Lives- tock / Poultry
1.	2.	3.	4.	5.	6.	7.	8.
1.	Households rearing only one type of Livestock/or poultry	27.86	7.09	5.67	0.07	-	-
2.	Total house- holds rearing Livestock or Poultry in combination	60.98	32.20	25.43	0.91	37.16	22.15

From the total households observed, it was found that about 61 percent households reared bovine, 32.2 percent reared poultry and 25.4 percent households reared goats, either alone or in combination with other type of livestock or poultry.

2.4 GENERAL FACILITIES FOR THE VILLAGES

Information regarding facilities for veterinary aid, distance from market for cattle feed, milk, etc. was collected for the selected villages and is given in Table no. 7.

TABLE NO. 7

DISTRIBUTION OF VILLAGES ACCORDING TO AVAILABILITY OF  
VARIOUS FACILITIES AND THEIR DISTANCE.

Sr.No.	Facility	Percentage of villages for which it is available at a distance of (kms.)					Average distance in (Kms.)
		0	0 to 3	3 to 5	5 to 10	above 10	
1.	2.	3.	4.	5.	6.	7.	8.
1.	Veterinary Aid	7.4	22.8	22.2	33.8	13.8	6.1
2.	Veterinary Dispensary	3.3	12.7	14.5	37.8	31.7	11.2
3.	Artificial Insemination	6.3	22.3	21.5	36.0	13.9	8.2
4.	Market for Cattle feed	3.0	9.1	6.6	35.7	45.6	10.6
5.	Market for milk & Milk product	14.3	11.3	11.3	36.5	26.6	8.1
6.	Market for cattle	0.6	6.8	6.8	26.4	59.4	12.6
7.	Market for egg	5.6	9.1	11.2	37.8	36.3	9.5
8.	Market for wool	0.4	3.9	7.0	27.5	61.2	16.6
9.	Market for meat	3.0	12.1	10.9	34.5	38.5	8.4

It may be observed that veterinary aid or veterinary dispensary services were available in 7.4 percent villages in the villages itself and the average distance at which these facilities were available was 6.1 kms. The artificial insemination facility was available in 6 percent villages in village itself and average distance at which this facility was available was 8.2 kms. The cattle feed was available in village itself in the case of only 3 percent villages and average distance at which cattle feed was 10.6 kms.

2.5 AVERAGE NO. OF LIVESTOCK AND POULTRY REARED PER 100 HOUSEHOLDS:-

The details about the number of bovine, poultry, goats and sheep reared per 100 households is presented in Table No. 8(A).

TABLE NO. 8(A)AVERAGE NUMBER OF LIVESTOCK / POULTRY PER 100 HOUSEHOLDS

Sr.No.	Category	In-milk	Dry & not calved once	Adult even males	Young stock	Total
1.	2.	3.	4.	5.	6.	7.
1.	Cattle	27	37	87	53	204
2.	Buffalo	15	16	3	18	52
3.	Poultry	-	-	-	-	226
4.	Goats	-	-	-	-	108
5.	Sheep	-	-	-	-	25

It is seen from the above table that average number of cattle reared per 100 households was 204, the buffalo class bovines, 52, goats 108 and sheep 25. The same for Poultry was 226.

The livestock for households keeping particular class of animals is presented in Table No. 8(B).

TABLE NO. 8(B)AVERAGE NUMBER OF LIVESTOCK PER 100 HOUSEHOLDS KEEPING PARTICULAR KIND OF LIVESTOCK

Sr.No.	Category	In-milk	Dry + N.C.	Adult females	Adult males	Young stock	Total
1.	2.	3.	4.	5.	6.	7.	8.
1.	<u>Bovine</u>						
	a) Cattle	44	61	105	142	87	334
	b) Buffalo	25	26	51	5	29	85
2.	Goat	123	135	258	15	151	424
3.	Sheep	-	-	2057	127	552	2736

### 3.1 MILK PRODUCTION AND BOVINE KEEPING PRACTICES :

The estimates of milk production for 12 groups of districts including Gr. Bombay, during each season was obtained for indigenous cows and buffaloes separately. It was based on (1) estimates of average daily milk yield per animal in-milk (2) estimated number of animals in-milk and (3) Number of days in the season. The results are based on 8,672 cows and 5,717 buffaloes for milk recording during the year.

Attempts were also made from 1985-86 to obtain the separate estimates of milk production in respect of crossbred cows also. However, it was not possible at this stage to obtain these estimates for each group of districts as was possible in respect of indigenous cows. This is due to the fact that the number of crossbred cows observed is not sizable. Hence, only State estimates are worked-out in case of crossbred cows.

### 3.2 ESTIMATED NUMBER OF IN-MILK AND MILCH ANIMALS

The 'Ratio' method of estimation was adopted to work out the estimated number of in-milk cows as well as buffaloes. The ratio was worked-out between the total number of in-milk animals enumerated and the corresponding number as per the 1982 census in all the selected villages in respective group of districts and in addition to that received from Panchayat Samiti for remaining 15 percent villages was also used to obtain this ratio. However, for winter season Ratio was worked out using 1987 census figures.

The estimates so obtained for different group of districts were pooled together to obtain the estimated number for a season. For state as a whole a similar procedure was adopted to obtain the estimated number of milch animals.

The estimated number of in-milk and milch animals so worked-out for different seasons and for groups of districts are presented in Table No. 9,10,11 and 12 respectively.

TABLE NO. 9

Estimated number of in-milk and milch animals  
for summer season

Sr.No.	Group of Districts	Estimated no. of animals (in lakhs)			
		In-milk		Milch	
		Indige- nous COWS	Buffal- oes	Indige- nous COWS	Buffal- oes
1.	2.	3.	4.	5.	6.
1.	Gr. Bombay	0.02	0.46	0.03	0.49
2.	Thane, Raigad	1.29	0.86	2.75	1.29
3.	Ratnagiri, Sindhudurg	0.81	0.37	1.86	0.64
4.	Nasik, Dhule, Jalgaon	2.75	1.61	6.38	2.90
5.	Ahmednagar, Pune	2.01	1.17	5.02	2.03
6.	Satara, Sangli, Kolhapur	1.26	3.87	2.59	5.92
7.	Solapur, Latur, Osmanabad, Beed	2.64	1.70	5.18	2.90
8.	Aurangabad, Jalna, Buldhana	1.93	0.68	4.09	1.20
9.	Parbhani, Nanded	1.97	0.89	4.35	1.62
10.	Akola, Amravati, Yavatmal	2.55	1.03	6.44	1.95
11.	Wardha, Nagpur, Bhandara	2.00	0.65	5.47	1.24
12.	Gadchiroli, Chandrapur	1.43	0.25	3.37	0.53
State Total		20.66 ( 4.82)	13.54 ( 6.27)	47.53	22.71
Crossbred for the State		2.31	-	3.38	

Note :- Figures in brackets indicate percentage standard error.

TABLE NO. 10

Estimated number of in-milk and milch animals  
for Rainy Season

Sr.No.	Group of Districts	Estimated number of animals (in lakhs)			
		In-milk		Milch	
		Indige- nous cows	Buffal- oes	Indige- nous cows	Buffal- oes
1	2	3	4	5	6
1.	Gr. Bombay	0.02	0.46	0.03	0.49
2.	Thane, Raigad	1.36	0.88	2.84	1.32
3.	Ratnagiri, Sindhudurg	0.86	0.38	1.95	0.66
4.	Nashik, Dhule, Jalgaon	2.87	1.68	6.71	2.99
5.	Ahmednagar, Pune	2.09	1.18	5.19	2.05
6.	Satara, Sangli, Kolhapur	1.32	3.93	2.66	5.92
7.	Solapur, Latur, Osmanabad, Beed	2.80	1.90	5.42	2.99
8.	Aurangabad, Jalna, Buldhana	2.03	0.72	4.27	1.22
9.	Parbhani, Nanded	2.05	0.89	4.51	1.64
10.	Akola, Amravati, Yavatmal	2.62	1.04	6.66	1.97
11.	Wardha, Nagpur, Bhandara	2.03	0.65	5.69	1.23
12.	Gadchiroli, Chandrapur	1.44	0.29	3.48	0.54
State Total		21.29 ( 4.79)	14.00 ( 4.29)	49.41	23.02
Crossbred cows for the State		3.28	-	4.96	-

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 11

Estimated number of in-milk and milch animals for the Winter Season

Sr.No.	Group of Districts	Estimated number of animals (in lakhs)			
		in-milk		Milch	
		In-ge- nua cows	Buffal- oes	Indige- nous cows	Buffal- oes
1	2	3	4	5	6
1.	Gr. Bombay	0.04	0.88	0.05	0.91
2.	Thane, Raigad	1.37	0.96	3.01	1.44
3.	Ratnagiri, Sindhudurg	0.88	0.43	1.94	0.77
4.	Nashik, Dhule, Jalgaon	2.88	1.90	6.36	3.32
5.	Ahmednagar, Pune	2.00	1.21	3.93	2.00
6.	Satara, Sangli, Kolhapur	1.30	4.56	2.27	6.08
7.	Solapur, Latur, Osmanabad, Beed	2.83	2.06	5.11	3.30
8.	Aurangabad, Jalna, Bulchana	1.85	0.73	3.97	1.42
9.	Parbhani, Nanded	2.21	1.17	4.43	1.33
10.	Akola, Amravati, Yavatmal	2.59	1.02	6.57	1.98
11.	Wardha, Nagpur, Bhandara	2.25	0.77	5.79	1.44
12.	Gadchiroli, Chandrapur	1.43	0.30	3.51	0.63
State Total		21.63	15.99	46.94	25.81
		(4.45)	(4.64)		
Crossbred cows for the State		3.44	-	5.09	

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE 10. 12

Estimated number of in-milk and milch animals for the year (Overall)

Sr.No.	Group of Districts	Estimated number of animals(in lakhs)			
		In-milk		Milch	
		Indige- nous Cows	Buffal- oes	Indige- nous Cows	Buffal- oes
1.	2.	3.	4.	5.	6.
1.	Gr. Bombay	0.03	0.60	0.04	0.63
2.	Thane, Raigad	1.34(11.3)	0.90(11.1)	2.87(11.7)	1.35(10.7)
3.	Ratnagiri, Sindhudurg	0.85(8.1)	0.39(12.6)	1.92(10.7)	0.69(15.0)
4.	Nashik, Dhule, Jalgaon.	2.83(7.5)	1.73(13.6)	6.48(4.5)	3.07(12.0)
5.	Ahmednagar, Pune	2.03(5.7)	1.19(12.7)	4.71(2.7)	2.03(12.2)
6.	Satara, Sangli, Kolhapur	1.29(5.5)	4.12(14.2)	2.51(0.4)	6.10(11.9)
7.	Solapur, Latur, Osmanabad, Beed	2.76(8.0)	1.89(19.6)	5.24(5.9)	3.09(14.4)
8.	Aurangabad, Jalna, Buldhana	1.94(4.4)	0.71(12.0)	4.11(4.6)	1.28(13.3)
9.	Parbhani, Nanded	2.08(9.9)	0.98(17.1)	4.43(6.7)	1.70(13.3)
10.	Akola, Amravati, Yavatmal	2.59(7.2)	1.03(10.0)	6.55(6.7)	1.97(10.7)
11.	Wardha, Nagpur, Bhandara	2.09(10.9)	0.69(16.7)	5.65(7.6)	1.30(17.1)
12.	Gadchiroli, Chandrapur.	1.43(6.3)	0.28(19.7)	3.45(5.8)	0.57(18.7)
State Total		21.26(7.7)	14.51(9.1)	47.96(5.1)	23.78(13.2)
Percentage Standard Errors		2.71	2.33	-	-
Crossbred and Exotic		3.01(233.0)	-	4.45(136.7)	-

Note :- Figures in brackets indicate percentage increase over census figures of 1982.

The above table indicates that during the year 1983-84 as compared to 1982 census in the case of in-milk Indigenous cows the percentage increase for State as a whole comes to 8 percent, the same for crossbred cows and buffaloes comes to 233 percent and 9 percent respectively. In the case of milch animals, the



percentage increase for the state for indigenous cows, crossbred cows and buffaloes comes to 5., 137 and 13 percent respectively. The percentage increase in crossbred cows is note worthy and is a result of crossbreeding programme in the State. Due to crossbreeding programme percentage increase in indigenous cows is comparatively low.

### 3.3 AVERAGE DAILY MILK YIELD PER ANIMAL IN-MILK AND PER MILCH

#### ANIMAL :-

The estimated average yield per cow in-milk and per milch animal in respect of cows and buffaloes for Summer, Rainy and Winter Seasons are presented in Tables - 13, 14 and 15 respectively.

TABLE NO. 13

Average daily milk yield per animal in-milk and per milch animal for summer season

Group No.	Group of the Districts	Per day average milk yield (kg.)			
		Indigenous cows		Buffaloes	
		In-milk	Milch	In-milk	Milch
1	2	3	4	5	6
1.	Gr. Bombay	5.270	3.594	5.670	5.340
2.	Thane, Raigad	0.776	0.365	2.071	1.378
3.	Ratnagiri, Sindhudurg	1.062	0.462	2.049	1.192
4.	Nashik, Dhule, Jalgaon	1.301	0.561	3.126	1.734
5.	Ahmednagar, Pune	1.346	0.538	2.456	1.408
6.	Satara, Sangli, Kolhapur	1.165	0.566	2.198	1.435
7.	Solapur, Latur, Osmanabad, Beed	1.579	0.806	2.696	1.580
8.	Aurangabad, Jalna, Buldhana	1.205	0.569	2.835	1.594
9.	Parbhani, Nanded	1.180	0.535	2.066	1.142
10.	Akola, Amravati, Yavatmal	0.848	0.336	2.178	1.153
11.	Wardha, Nagpur, Bhandara	0.734	0.268	2.589	1.356
12.	Gadchiroli, Chandrapur	0.460	0.172	1.614	0.772
-	State as a whole	1.101 (3.61)	0.479	2.530 (6.30)	1.508
-	For Crossbred and Exotic cows	5.629	3.948	-	-

Note:- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 14

Average daily milk yield per animal in-milk and per milch animal for Rainy Season

Group No.	Group of the Districts	Per day average milk yield (in kg.)			
		Indigenous cow		Buffalo	
		In-milk	Milch	In-milk	Milch
1.	2.	3.	4.	5.	6.
1.	Gr. Bombay	4.580	3.115	5.700	5.368
2.	Thane, Raigad	1.100	0.526	2.432	1.629
3.	Ratnagiri, Sindhudurg	1.504	0.576	1.840	1.055
4.	Nashik, Dhule, Jalgaon	1.637	0.699	3.096	1.726
5.	Ahmednagar, Pune	1.459	0.587	2.797	1.610
6.	Katara, Sangli, Kolhapur	1.145	0.570	2.409	1.508
7.	Solapur, Latur, Osmanabad, Beed	1.689	0.874	3.280	2.036
8.	Aurangabad, Jalna, Buldhana	1.430	0.680	3.085	1.805
9.	Parbhani, Nanded	1.219	0.555	2.267	1.229
10.	Akola, Amravati, Yavatnal	0.912	0.359	2.369	1.244
11.	Wardha, Nagpur, Bhandara	0.705	0.251	3.126	1.650
12.	Gadchiroli, Chandrapur	0.414	0.171	1.769	0.974
	State as a whole	1.234 (3.37)	0.537	2.780 (4.39)	1.691
	For Crossbred and Exotic Cows	6.718	4.442		

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 15

Average daily milk yield per animal in-milk and per  
milk animal for Winter Season

Group No.	Group of the Districts	Per day average milk yield (in kg.)			
		Indigenous cows		Buffaloes	
		In-milk	Milk	In-milk	Milk
1	2	3	4	5	6
1.	Gr. Bombay	5.382	4.153	6.469	6.248
2.	Thane, Raigad	1.095	0.499	3.000	1.993
3.	Ratnagiri, Sindhudurg	1.095	0.495	2.113	1.192
4.	Nashik, Dhule, Jalgaon	1.577	0.715	3.221	1.833
5.	Ahmednagar, Pune	1.428	0.727	2.610	1.585
6.	Satara, Sangli, Kolhapur	1.250	0.715	2.581	1.814
7.	Solapur, Latur, Osmanabad, Beed	1.491	0.825	3.385	2.054
8.	Aurangabad, Jalna, Buldhana	1.413	0.660	3.064	1.584
9.	Parbhani, Nanded	1.458	0.728	2.981	1.907
10.	Akola, Amravati, Yavatmal	0.805	0.317	2.934	1.511
11.	Wardha, Nagpur, Bhandara	0.699	0.272	3.388	1.798
12.	Gadchiroli, Chandrapur	0.382	0.155	2.495	1.179
State as a whole		1.199 (2.77)	0.553	3.099 (2.32)	1.933
Crossbred and Exotic Cows		6.149	4.158		

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 16

Average daily milk yield per animal in-milk and per milch animal (Overall)

Group No.	Group of the Districts	Per day average milk yield (in kg.)			
		Indigenous cow		Buffalo	
		In-milk	Milch	In-milk	Milch
1	2	3	4	5	6
1.	Gr. Bombay	5.127	3.952	6.042	5.754
2.	Thane, Raigad	0.994	0.464	2.515	1.676
3.	Ratnagiri, Sindhudurg	1.155	0.511	2.003	1.132
4.	Nashik, Dhule, Jalgaon	1.508	0.659	3.149	1.774
5.	Ahmednagar, Pune	1.412	0.609	2.622	1.537
6.	Satara, Sangli, Kolhapur	1.186	0.609	2.404	1.624
7.	Solapur, Latur, Osmanabad, Beed	1.587	0.836	3.140	1.921
8.	Aurangabad, Jalna, Buldhana	1.350	0.637	2.993	1.663
9.	Parbhani, Nanded	1.290	0.605	2.483	1.431
10.	Akola, Amravati, Yavatmal	0.856	0.338	2.490	1.302
11.	Wardha, Nagpur, Bhandara	0.712	0.263	3.051	1.619
12.	Gadchiroli, Chandrapur	0.401	0.166	1.975	0.970
State as a whole		1.179 (1.87)	0.523	2.816 (2.49)	1.718
Crossbred and Exotic Cow		6.221	4.208	-	-

It is seen from the table no. 16, that the overall average milk yield per day/Indigenous cow in-milk was 1.179 kg. and that for exotic/crossbred cow in-milk was 6.221 kg. In case of buffalo the same was 2.816 kg.

The average milk yield per animal in-milk and per milch animal for Gr. Bombay indicates abnormally less difference mainly because rearing of dry animals is costly in Bombay.

## 3.4 MILK PRODUCTION :-

The estimates of milk production for each group of districts for the three seasons and also for the entire year have been worked-out for cows and buffaloes separately and shown in Table Nos. 17,18,19, and 20.

TABLE NO. 17

Estimated milk production for Summer Season

Group No.	Group of the Districts	Milk production (in '000' M.T.)	
		Indigenous cow Milk	Buffalo milk
1	2	3	4
1.	Gr. Bombay	: 1.189	32.129
2.	Thane, Raigad	: 12.233	21.673
3.	Ratnagiri, Sindhudurg	: 10.464	9.253
4.	Nashik, Dhule, Jalgaon	: 43.683	61.455
5.	Ahmednagar, Pune	: 32.962	34.894
6.	Satara, Sangli, Kolhapur	: 17.893	103.749
7.	Solapur, Latur, Osmanabad, Beed	: 50.918	55.872
8.	Aurangabad, Jalna, Buldhana	: 28.433	23.417
9.	Parbhani, Nanded	: 28.357	22.485
10.	Akola, Amravati, Yavatmal	: 26.409	27.410
11.	Wardha, Nagpur, Bhandara	: 17.901	20.444
12.	Gadchiroli, Chandrapur	: 7.094	4.979
State Total		: 277.536 ( 6.28)	417.760 ( 7.64)
For Crossbred and Exotic Cow		158.862	-

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 18

Estimated Milk Production for Rainy Season

Group No.	Group of Districts	Milk production (in '000' M.T.)	
		Indigenous Cow	Buffaloes
1	2	3	4
1.	Gr. Bombay	1.042	32.563
2.	Thane, Raigad	18.392	26.445
3.	Ratnagiri, Sindhudurg	13.825	8.524
4.	Nashik, Dhule, Jalgaon	57.732	63.843
5.	Ahmednagar, Pune	37.502	40.528
6.	Satara, Sangli, Kolhapur	18.629	116.469
7.	Solapur, Latur, Osmanabad, Beed	58.277	76.630
8.	Aurangabad, Jalna, Buldhana	35.676	27.177
9.	Parbhani, Nanded	30.777	24.754
10.	Akola, Amravati, Yavatmal	29.376	30.222
11.	Wardha, Nagpur, Bhandara	17.584	25.121
12.	Gadchiroli, Chandrapur	7.320	6.435
State Total		326.132 ( 5.44)	478.701 ( 5.87)
Crossbred Cows		271.004	-

Note:- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 19

Estimated Milk Production for Winter Season

Group No.	Group of the Districts	Milk Production (in '000' M.T.)	
		Indigenous Cows	Buffaloes
1	2	3	4
1.	Gr. Bombay	2.249	67.966
2.	Thane, Raigad	18.060	34.563
3.	Ratnagiri, Sindhudurg	11.536	11.007
4.	Nashik, Dhule, Jalgaon	54.494	73.261
5.	Ahmednagar, Pune	34.273	38.027
6.	Satara, Sangli, Kolhapur	19.433	141.166
7.	Solapur, Latur, Osmanabad, Beed	50.613	83.570
8.	Aurangbad, Jalna, Buldhana	31.434	27.010
9.	Parbhani, Nanded	38,742	41.862
10.	Akola, Amravati, Yavatmal	24.980	35.993
11.	Wardha, Nagpur, Bhandara	18,883	31.108
12.	Gadchiroli, Chandrapur	6.546	8.939
State Total		311.243 ( 5.87)	594.472 ( 5.17)
Crossbred and Exotic Cows		253.797	-

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 20

Estimated milk production for the year (overall)

Group No.	Group of the Districts	Milk Production (in '000' M.T.)		
		Indigenous cows	Buffaloes	Total
1	2	3	4	5
1.	Gr. Bombay	4.460	132.658	137.138
2.	Thane, Raigad	48.685	82.680	131.365
3.	Ratnagiri, Sindhudurg	35.825	28.784	64.609
4.	Nashik, Dhule, Jalgaon	155.909	198.558	354.467
5.	Ahmednagar, Pune	104.737	113.449	218.186
6.	Satara, Sangli, Kolhapur	55.954	361.385	417.339
7.	Solapur, Latur, Osmanabad, Beed	159.808	216.072	375.880
8.	Aurangabad, Jalna, Buldhana	95.543	77.606	173.149
9.	Parbhani, Nanded	97.877	89.092	186.969
10.	Akola, Amravati, Yavatmal	80.764	93.624	174.388
11.	Wardha, Nagpur, Bhandara	54.368	76.673	131.041
12.	Gadchiroli, Chandrapur	20.960	20.352	41.312
State Total		914.910 ( 3.98)	1490.933 ( 3.52)	2405.843
Crossbred and exotic cows		683.663	-	683.663
Overall for Deshi + Crossbred cows		1598.573	-	-
Overall for Cows + Buffaloes		-	-	3089.506

Note:- The figures in the brackets indicate Percentage Standard Errors.

It is seen from the table no. 20 that the total milk production from bovines for the State, during the year, was estimated as 3089.5 thousand tonnes. Of this, the contribution from cows was about 52 percent and remaining 48 percent was from buffalo class. Per capita availability of bovine milk during the year was found to be 117 Gms., based on the projected human population for the year under reference.



3.4.1 To study the seasonal variation of average milk yield and total milk production, the district groupwise average milk yield and total milk production during Summer, Rainy and Winter seasons is given in the table no. 21 for indigenous cows. As the district group averages are not worked-out for crossbred cows the State figures are given.

TABLE NO. 21

Table showing average per day per animal milk yield for indigenous cows in-milk and total milk production during Summer, Rainy and Winter seasons of the year 1989-90 (Milk yield in kg. Milk Production in '000' M.T.)

Group No.	Group of the Districts	Summer		Rainy		Winter	
		Average milk production	Total milk production	Average milk production	Total milk production	Average milk production	Total milk production
1	2	3	4	5	6	7	8
1.	Gr. Bombay	: 5.270	1.189	4.580	1.042	5.382	2.249
2.	Thane, Raigad	: 0.776	12.233	1.100	18.392	1.095	18.060
3.	Ratnagiri, Sindhudurg	: 1.062	10.464	1.304	13.825	1.093	11.536
4.	Nashik, Dhule, Jalgaon	: 1.301	43.683	1.637	57.732	1.577	54.494
5.	Ahmednagar, Pune	: 1.346	32.962	1.459	37.502	1.428	34.273
6.	Satara, Sangli, Kolhapur	: 1.165	17.893	1.145	18.629	1.250	19.433
7.	Solapur, Latur, Osmanabad, Beed	: 1.579	50.918	1.689	58.277	1.491	50.613
8.	Aurangabad, Jalna, Buldhana	: 1.205	28.433	1.430	35.676	1.414	31.434
9.	Parbhani, Nanded	: 1.180	28.357	1.219	30.777	1.458	38.742
10.	Akola, Amravati, Yavatmal	: 0.843	26.409	0.912	29.376	0.805	24.980
11.	Wardha, Nagpur, Bhandara	: 0.734	17.901	0.705	17.584	0.699	18.383
12.	Gadchiroli, Chandrapur	: 0.407	7.094	0.414	7.320	0.382	6.546
State Total		: 1.101	277.536	1.234	326.132	1.199	311.243
Exotic and Cross-bred cows		: 5.629	158.862	6.718	271.004	6.149	253.797

The table indicates that in the case of cows the seasonal variation is not note worthy though in the case of State as a whole the average milk yield and total milk production is minimum in summer season and maximum in rainy season. In the district groups Thane/Raigad and Ratnagiri/Sindhudurg the average and total milk production during summer season is considerably low as in these districts the fodder and water scarcity exists in majority of villages during summer season. In the case of crossbred cows there is seasonal variation, the average milk yield and total milk production being minimum during summer season.

3.4.2.

3.4.2. The data to study the seasonal variation in milk yield and milk production in respect of buffaloes is given in the table no. 22.

TABLE NO. 22

Table showing average per day, per animal milk yield for buffaloes in-milk and total milk production during Summer, Rainy and Winter seasons of the year 1989-90 (Average milk yield in kg. milk production in '000' M.T.)

Group No.	Group of the Districts	Summer		Rainy		Winter	
		Daily average milk yield/ Buffaloes in-milk	Total milk production	Daily average milk yield/ Buffaloes in-milk	Total milk production	Daily average milk yield/ Buffaloes in-milk	Total milk production
1	2	3	4	5	6	7	8
1.	Gr. Bombay	5.670	32.129	5.700	32.563	6.469	67.966
2.	Thane, Raigad	2.071	21.673	2.432	26.445	3.000	34.563
3.	Ratnagiri, Sinchudurg	2.049	9.253	1.840	8.524	2.113	11.007
4.	Nashik, Dhule, Jalgaon	3.126	61.455	3.096	63.843	3.221	73.261
5.	Ahmednagar, Pune	2.456	34.894	2.797	40.528	2.610	38.027
6.	Satara, Sangli, Kolhapur	2.198	103.749	2.409	116.469	2.581	141.166
7.	Solapur, Latur, Osmanabad, Beed	2.696	55.872	3.280	76.430	3.385	83.570
8.	Aurangabad, Jalna, Buldhana	2.835	23.417	3.085	27.177	3.064	27.010
9.	Parbhani, Nanded	2.066	22.485	2.267	24.744	2.981	41.862
10.	Akola, Amravati, Yavatmal	2.178	27.410	2.369	30.222	2.934	35.993
11.	Wardha, Nagpur, Bhandara	2.589	20.444	3.126	25.121	3.388	31.108
12.	Gadchiroli, Chandrapur	1.614	4.979	1.769	6.435	2.495	8.939
State Total/ Overall		2.530	417.760	2.780	478.701	3.099	594.472

The above table indicates that in the case of buffalo class the minimum daily average milk yield and total milk production is observed in Summer Season and the same is increased by 9.9, 22.5 and 14.6 percent during the rainy and winter seasons respectively. The Gr. Bombay results, also indicate the minimum average milk yield and production in summer season.

3.4.3 The data about the average per day milk yield and total milk production for the years 1987-88, 1988-89 and 1989-90 for cattle and buffalo class is given in Table No. 23. The average milk yield per day and total milk production for crossbred cows is being worked-out since 1985-86

It is observed from the table that the total milk production during 1987-88, 1988-89 and 1989-90 for cattle class and was 1,143, 1,262/thousand M.T. respectively. The increase in milk production was mainly due to good rainy season in the state during 1989-90. The buffalo milk production is also increased by 37 percent as compared to 1988-89.

TABLE NO. 23

Statement showing comparative data about average milk yield per day, per animal and total milk production for the years 1967-68, 1988-89 and 1989-90

Group No.	Group of Districts	1967-68		1988-89		1989-90	
		Other than C.B. Cows	C.B. Cows	Other than C.B. Cows	C.B. Cows	Other than C.B. Cows	C.B. Cows
		Average milk yield per day per animal in-milk (kg.)	Total milk production ('000' M.T.)	Average milk yield per day per animal in-milk (kg.)	Total milk production ('000' M.T.)	Average milk yield per day per animal in-milk (kg.)	Total milk production ('000' M.T.)
1	2	3	4	5	6	7	8
1.	Gr. Bombay	5.679	3.844	6.619	112.516	4.945	3.610
2.	Thane, Raigad	0.928	42.064	2.562	82.352	0.889	41.231
3.	Ratnagri, Sindhudurg	0.641	19.080	1.283	17.115	0.879	25.994
4.	Nashik, Dhule, Jalgaon	1.221	122.943	2.755	165.869	1.272	127.235
5.	Ahmednagar, Pune	1.185	86.893	2.553	109.486	1.354	99.834
6.	Satara, Sangli, Kolhapur	1.152	53.300	2.567	360.846	1.195	54.972
7.	Solapur, Latur, Osmara bad, Beed	1.440	139.729	2.978	183.943	1.500	147.852
8.	Aurangabad, Jalna, Buldhara	1.010	70.887	2.773	70.039	1.163	81.958
9.	Parbhani, Nanded	1.177	83,805	1.887	61,376	1.260	90,113
10.	Akola, Amravata, Yavatmal	0.777	72,314	2.613	96,298	0.861	80,424
11.	Wardha, Nagpur, Bhandara	0.700	52,261	3.002	70,141	0.717	52,574
12.	Gadchiroli, Chandrapur	0.404	20,629	1.809	17,158	0.398	20,635
State Total		1.321	767.749	2.719	1347.139	1.094	826.432
Exotic and Cross-bred cows		5.318	580.292	-	-	6.003	435.993

Table No. 23 (contd.)

Group No.	Group of Districts	1988-89		1989-90			
		Buffalo		Other than C.B. cows		Buffalo	
		Average milk yield per animal in-milk (kg.)	Total milk production ('000' M.T.)	Average milk yield per animal in-milk (kg.)	Total milk production ('000' M.T.)	Average milk yield per animal in-milk (kg.)	Total milk production ('000' M.T.)
1	2	9	10	11	12	13	14
1.	Gr. Bombay	6.477	108.748	5.127	4.480	6.042	132.658
2.	Thane, Raigad	2.715	86.198	0.994	48.685	2.515	82.680
3.	Ratnagiri, Sindhudurg	1.689	22.167	1.155	35.825	2.003	28.784
4.	Nashik, Dhule, Jalgaon	3.068	184.770	1.508	155.909	3.149	198.558
5.	Ahmednagar, Pune	2.607	112.268	1.412	104.737	2.622	113.449
6.	Satara, Sangli, Kolhapur	2.449	346.825	1.186	55.954	2.404	361.385
7.	Solapur, Latur, Osmanabad, Beed	3.082	191.261	1.587	159.808	3.140	216.072
8.	Aurangabad, Jalna, Buldhana	2.993	74.287	1.350	95.543	2.998	77.706
9.	Parbhani, Nanded	2.036	65.400	1.290	97.877	2.483	89.092
10.	Akola, Amravati, Yavatmal	2.523	93.946	0.856	80.764	2.490	93.624
11.	Wardha, Nagpur, Bhandara	2.931	69.536	0.712	54.368	3.051	76.673
12.	Gadchiroli, Chandrapur	1.698	16.112	0.401	20.960	1.975	20.352
State Total		2.765	1371.518	1.179	914.910	2.816	1490.933
Exotic and Cross-bred cows		-	-	6.221	683.663	-	-

### 3.5 AVAILABILITY OF MILK IN BOVINE KEEPER HOUSEHOLDS :-

The information regarding availability of milk was collected for the previous day of visit from 10,010 bovine keeper households. The details about production and purchase of milk are given in table no. 24 for cow milk and buffalo milk separately.

TABLE NO. 24

Availability of milk in bovine keeper households

Category	Producing milk		Purchasing milk		Total milk produced + purchased	
	% of house holds	Average quantity of milk per house hold(kg.)	% of house holds	Average quantity of milk per house hold(kg.)	% of house holds	Average quantity of milk per house hold(kg.)
1	2	3	4	5	6	7
a) Only cow milk	64.8	2.195	49.3	0.290	61.8	1.796
b) Only buff. milk	28.9	3.652	50.7	0.272	33.3	2.358
c) Both cow milk and buff. milk	6.3	2.265	-	-	4.9	2.265
Total cow milk and Buff. milk	100.0	2.195	100.0	0.290	100.0	1.824
Overall availability per day						
Cow milk	-	0.991	-	0.034	-	1.025
Buff. Milk	-	0.915	-	0.022	-	0.937
Total	-	1.906	-	0.056	-	1.962

It was observed that on an average a bovine keeper household produced 991 Grams of cow milk and 915 Grams of buffalo milk, whereas the quantity purchased was 34 Grams of cow milk and 22 grams of buffalo milk. The producer households are classified as 65 percent households producing cow milk, about 29 percent producing buffalo milk while 6 percent households producing cow milk as well as buffalo milk.

3.6 UTILISATION OF MILK :-

The information about utilisation of milk on the previous day of the visit in the bovine keeper (milk producer) households is presented in table no. 25.

TABLE NO. 25.

Utilisation of milk in bovine keeper households

Category	Percentage of milk				
	Consumed as fluid milk	Sold as fluid milk	Converted to milk products	Spoiled	Balan- ce
1	2	3	4	5	6
Only cow milk	42.9	54.0	2.2	0.1	0.8
Only buff. milk	27.9	67.5	3.6	N	1.0
Both )Cow milk	43.3	54.8	0.9	0.3	0.7
)Buff.milk	24.9	71.1	3.3	N	0.7
Overall )Cow milk	42.9	54.1	2.0	0.2	0.8
)Buff.milk	27.4	68.2	3.6	N	0.8

(Note :- N = Negligible)

The households producing only cow milk, consumed about 43 percent milk and sold 54 percent milk, whereas those producing only buffalo milk consumed about 28 percent and sold 68 percent of the milk. On an average 43 percent of cow milk was utilised at home and 54 percent was sold out. The same was 27 percent and 68 percent in respect of buffalo milk.

3.7 DISTRIBUTION OF IN-MILK ANIMALS ACCORDING TO DAILY MILK YIELD IN DIFFERENT RANGES :-

The animals observed for milk production were classified according to different ranges and are presented in Table no. 26.



TABLE NO. 26

Percentage distribution of in-milk animals according to daily milk yield

Sr.No.	Category	Season	Daily milk yield (Grams)							Total
			Upto 500	501 to 1000	1001 to 2000	2001 to 3000	3001 to 5000	Above 5000		
1	2	3	4	5	6	7.	8.	9	10	11
1)	Cow	Summer	3.1	23.9	28.5	23.7	7.5	6.5	6.8	100.00
		Rainy	3.3	21.3	26.0	26.5	9.1	7.6	6.2	100.00
		Winter	2.5	10.8	39.4	25.5	8.9	7.8	5.1	100.00
Overall			3.0	18.6	31.0	25.4	8.4	7.5	6.1	100.00
2)	Buffalo	Summer	0.2	3.0	9.0	27.2	34.0	23.6	3.0	100.00
		Rainy	0.2	4.1	14.0	23.3	24.9	22.4	11.1	100.00
		Winter	0.1	1.2	6.8	26.3	32.2	28.7	4.7	100.00
Overall			0.1	2.7	9.8	25.7	30.6	24.9	6.2	100.00

It is observed that about 53 percent cows have yield upto 1000 Grams, while 87 percent buffaloes were producing milk above 1000 Grams.

### 3.8 FEEDING PRACTICES :-

Data of feed and fodder fed to the animals were collected from the selected households having bovines. The data were collected for the following types of animals (bovines) (i) in-milk (ii) Dry and not calved even once (iii) adult males (iv) Youngstock upto 3 years. The type of feed and fodder fed were green fodder, dry fodder and concentrates.

During the year under report, data were collected from households having 31,400 cattle and 3,867 buffaloes. While collecting the data on feeding, information on whether the animals were only grazed, only stallfed or both, was also collected. The season-wise details about the number of animals observed for feeding practices are given in table no. 27.

TABLE No. 27Number of animals observed for feeding practices

Category of animals	Cattle				Buffaloes			
	Summer	Rainy	Winter	Total	Summer	Rainy	Winter	Total
1	2	3	4	5	6	7	8	9
In-milk	2214	2191	2757	7162	1350	1146	1289	3785
Dry+ Not calved even once	1486	1990	1712	5188	721	783	590	2094
Adult males	3608	4096	4270	11974	221	170	118	509
Youngstock upto 3 years	2114	2460	2502	7076	903	785	791	2479
Total	9422	10737	11241	31400	3195	2884	2788	8867

3.9 DISTRIBUTION OF ANIMALS ACCORDING TO FEEDING PRACTICES :-

The details about the feeding practices of the bovine are given in table no. 28.

It was observed that about 15 percent cattle were only grazed while 13 percent animals were stallfed only. In respect of buffaloes about 11 percent animals were grazed only and 10 percent were stallfed only. The percentages of only stallfed animals were more in youngstock category of both cattle and buffalo class.

TABLE NO. 29

Percentage distribution of animals according to general feeding practices followed, as only Grazed (G), only stall-fed (S) or both (G + S)

Category of animals	Dry			Rainy		
	G	S	G + S	G	S	G + S
1	2	3	4	5	6	7
<b>CATTLE</b>						
1. In-milk	1.7	7.5	90.8	9.2	6.7	84.1
2. Dry + N.C.	32.4	20.1	55.5	39.4	19.3	41.3
3. Adult males	6.0	7.7	86.3	11.2	3.9	84.9
4. Youngstock upto 3 years	16.5	50.2	53.3	25.3	21.1	53.6
Overall	11.5	16.5	75.7	19.1	11.2	69.7
<b>BUFFALOES</b>						
1. In-milk	1.5	4.6	93.9	1.5	1.3	97.2
2. Dry + N.C.	14.9	10.3	74.8	28.5	1.0	70.5
3. Adult males	5.0	6.3	88.7	20.0	1.2	78.8
4. Youngstock upto 3 years	12.7	32.1	55.2	18.7	25.1	56.2
Overall	7.9	13.8	78.3	14.6	7.7	77.7
Category of animals	Winter			Overall		
	G	S	G + S	G	S	G + S
1	8	9	10	11	12	13
<b>CATTLE</b>						
1. In-milk	1.6	13.3	85.1	4.0	8.8	87.2
2. Dry + N.C.	29.5	3.5	62.0	33.5	10.5	56.0
3. Adult males	5.8	15.8	78.4	7.7	9.3	83.0
4. Youngstock upto 3 years	27.6	28.7	43.7	23.5	26.5	50.0
Overall	13.3	16.9	69.8	14.7	13.3	72.0

	8	9	10	11	12	13
<b>BUFFALOES</b>						
1. In-milk	0.6	5.3	94.1	1.2	3.6	95.2
2. Dry + N.C.	25.3	4.4	70.3	23.0	5.1	71.9
3. Adult males	0.8	14.4	84.8	9.0	6.5	84.5
4. Youngstock upto 3 years	18.0	39.4	42.6	17.8	25.8	56.4
Overall	10.8	15.2	74.0	11.3	10.0	78.7

G = Only Grazed, S = Only stallfed, G + S = Grazed and stallfed

### 3.11. AVERAGE QUANTITY OF FEED/FODDER FED PER DAY :-

The data was collected about the feed/fodder supplied to various categories of bovine in the selected bovine keeper households. The seasonwise details of average quantity of feed/fodder fed per animal per day are presented in table no. 29. These averages are based on all the animals observed, including those kept on grazing alone, also.

**TABLE NO. 29**

Seasonwise average quantity of feed/fodder fed per bovine per day

Season	Type of feed	Average feed fed per day per animal (kg.)							
		Cattle				Buffaloes			
		In-milk	Dry + N.C.	Adult males	Young stock	In-milk	Dry + N.C.	Adult males	Young stock
1	2	3	4	5	6	7	8	9	10
<b>SUMMER</b>									
Green		0.392	0.095	0.400	0.236	1.799	0.574	0.208	0.346
Dry		7.503	4.034	7.522	2.152	5.021	5.551	5.896	2.192
Concentrates		0.448	0.066	0.042	0.017	1.044	0.043	0.018	0.060
<b>RAINY</b>									
Green		7.844	3.370	6.632	2.228	9.584	4.663	4.718	2.103
Dry		1.021	0.574	1.263	0.276	1.500	0.970	0.712	0.229
Concentrates		0.369	0.071	0.079	0.035	0.900	0.027	0.021	N
<b>WINTER</b>									
Green		2.330	1.462	2.370	0.835	3.078	0.978	1.559	1.132
Dry		5.315	2.963	5.113	1.560	6.346	3.802	3.458	1.578
Concentrates		0.699	0.116	0.115	0.047	0.996	0.081	0.009	0.019
<b>OVERALL</b>									
Green		3.473	1.748	3.229	1.141	4.599	2.217	1.969	1.263
Dry		4.685	2.344	4.521	1.291	5.473	3.345	3.599	1.505
Concentrates		0.523	0.072	0.080	0.034	0.986	0.048	0.018	0.032

(N = Negligible)

It is seen from the table that in the case of cattle class maximum quantity of dry fodder, green fodder and concentrates is fed to in-milk cows. In buffalo class also the highest quantity of feed and fodder is fed to the in-milk buffaloes as compared to any other category.

**3.12 DISTRIBUTION OF BOVINE FED WITH DIFFERENT TYPES OF FEED AND FODDER EITHER ALONE OR IN COMBINATION :-**

The different categories of bovines are classified according to type of fodder fed and average quantity fed per day, per animal and this data are presented in table no. 30. Here, those animals which received some feeding at home are only considered and the averages are based on all the three seasons together.

TABLE-NO. 30

Distribution of bovine fed with different types of feed and fodder either alone or in combination and average quantity fed per animal per day

Type of fodder fed	Average quantity fed per animal per day (kg.)				
	In-milk	Dry + N.C.	Adult males	Young-stock	Overall
1	2	3	4	5	6
<b>A) CATTLE</b>					
i) Green	8.312 (43.5)	6.157 (42.7)	7.487 (46.7)	3.155 (47.2)	6.619 (45.5)
ii) Dry	7.335 (66.5)	5.444 (64.7)	7.886 (62.2)	2.808 (60.1)	6.439 (63.2)
iii) Concentrates	2.867 (19.0)	1.576 (6.8)	1.868 (4.6)	1.511 (2.5)	2.400 (8.1)
<b>B) BUFFALOES</b>					
i) Green	10.113 (46.1)	7.357 (39.4)	6.423 (33.7)	3.058 (49.7)	7.514 (44.8)
ii) Dry	8.225 (67.3)	6.350 (67.3)	5.502 (71.9)	1.505 (56.0)	6.596 (65.1)
iii) Concentrates	1.767 (56.5)	1.507 (4.1)	0.300 (6.5)	1.303 (1.8)	1.746 (29.2)

(Note :- Figures in brackets indicate percentage ~~xxx~~ of animals receiving some kind of feeding at home )

TABLE NO. 31

Distribution of bovine fed with different types of feed/fodder

Category	Classification	Percentage distribution of animals fed with						
		Only Green	Only Dry	Only Conc.	Green +Dry	Green +Conc.	Dry + Conc.	Green +Dry +Conc.
1	2	3	4	5	6	7	8	9
<u>CATTLE</u>	In-milk	26.5	46.7	0.7	7.8	6.3	9.1	2.9
	Dry +N.C.	31.7	54.2	0.7	7.3	2.9	2.4	0.8
	Adult males	36.5	50.6	0.1	8.3	1.2	2.6	0.7
	Youngstock	38.3	52.1	-	7.1	1.7	0.6	0.2
	Overall	33.7	50.4	0.3	7.8	2.8	3.8	1.2
<u>BUFFALOES</u>	In-milk	11.6	24.5	2.3	7.4	18.8	27.1	8.3
	Dry +N.C.	30.6	57.7	-	7.6	1.0	2.9	0.2
	Adult males	27.2	61.1	-	5.2	0.9	5.2	0.4
	Youngstock	42.8	48.9	0.9	6.5	0.3	0.5	0.1
	Overall	24.1	39.6	1.3	7.1	9.5	14.3	4.1

### 3.13 PRODUCTION AND UTILISATION OF DUNG

The data about production and utilisation of dung on the previous day of the visit was collected and seasonwise results are presented in table no. 32. Here, the dung collected in the stalls is only considered.

TABLE NO. 32

Utilisation of dung collected from bovines at stalls

Sr. No.	Season	Average quantity of dung collected per day/bovine (kg.)	Estimated annual quantity of dung collected ('000 M.T.)	Utilisation of dung (%)			
				For manure	For dung cakes	Other purposes Total	
1	2	3	4	5	6	7	8
1.	Summer	3.250 (13488)	9614.728	61.71	27.53	10.76	100.00
2.	Rainy	3.211 (14569)	9574.215	79.43	9.42	11.15	100.00
3.	Winter	2.952 (14299)	8564.432	57.87	29.65	12.48	100.00
Overall		3.136 (42356)	27756.375	66.73	21.85	11.42	100.00

(Note :- Figures in brackets indicate number of animals observed).

The average quantity of dung collected in stalls was about 3.1 kg. per animal per day. The average quantity collected was maximum in Summer Season. It is observed that the dung produced is mainly used as manure, in rural areas. The quantity of dung collected in the year for the state was estimated as 27,756 thousand M.T.

### 3.14 MORTALITY IN BOVINE :-

The mortality observed during the year in various categories of cattle and buffaloes is presented in table no. 33.

TABLE NO. 33Percentage of mortality in Bovine

Sr.No.	Category	Annual mortality rate in	
		Cattle	Buffaloes
1	2	3	4
1.	In-milk	1.17	1.22
2.	Dry and not calved even Once	2.27	2.19
3.	Adult males	1.06	2.45
4.	Youngstock	1.70	7.69
	Overall	1.47	3.88

It is seen from the table no. 33 that annual mortality observed in cattle class was about 1.5 percent as against 3.9 percent in buffaloes. The maximum mortality percentage was observed in youngstock category in buffaloes, followed by adult males category in buffalo class.



CHAPTER NO. IVEGG PRODUCTION AND POULTRY REARING PRACTICES4.1 SAMPLE SIZE OBSERVED

For collection of data about egg production and poultry rearing practices a cluster of 5 households was observed daily from the villages having poultry out of the total 570 selected villages. The details are as given below :-

TABLE NO. 34Number of villages and poultry birds observed

Sr. No.	Season	No. of villages observed	No. of households observed	No. of poultry birds observed					Total
				Cocks	Hens	Cock-erels	Pull-ets	Chicks	
1	2	3	4	5	6	7	8	9	10
1.	Summer	200	6226	2976	26270	3844	4524	14894	52508
2.	Rainy	180	6055	5103	20733	2818	3338	16686	48678
3.	Winter	190	6495	3070	17036	4690	7735	18171	50702
Total		570	18776	11149	64039	11352	15597	49751	151888

During the year data about egg production were collected for 64,039 layers and data on rearing practices followed were collected for 1,51,888 poultry birds from 18,776 poultry keeper households.

4.2 AVERAGE NUMBER OF POULTRY BIRDS PER 100 POULTRY KEEPER HOUSEHOLDS

The average number of poultry birds reared per 100 poultry keeper households, on the day of visit is presented in table no. 35.

TABLE NO. 35

Average number of poultry birds reared per 100 poultry keeper households.

Sr. No.	Season	No. of birds per 100 poultry keeper households					Total
		Cocks	Hens	Cockerels	Pullets	Chicks	
1	2	3	4	5	6	7	8
1.	Summer	48 (6)	422 (50)	62 (7)	72 (9)	239 (28)	843 (100)
2.	Rainy	84 (10)	342 (43)	47 (6)	55 (7)	276 (34)	804 (100)
3.	Winter	47 (6)	262 (34)	72 (9)	119 (15)	280 (36)	781 (100)
Overall		59 (7)	341 (42)	61 (8)	83 (10)	265 (33)	809 (100)

Note :- Figures in brackets indicate percentage to total poultry.

The average number of poultry birds reared per 100 poultry keeper households was maximum 843 during summer season, while it was minimum in winter season (i.e. 781). On an average, there were 809 birds per 100 poultry keeper households consisting of 59 cocks, 341 hens, 61 cockerels, 83 pullets and 265 chicks. The overall composition of poultry stock reared per 100 poultry keeper households was observed to be 7 percent ~~cocks~~ cocks, 42 percent hens, 8 percent cockerels, 10 percent pullets and 33 percent chicks.

#### 4.3 ESTIMATED NUMBER OF LAYERS, LAYING PERCENTAGE AND EGGS

##### PRODUCTION :-

The total egg production from deshi birds, for each group of districts, for the three seasons of the year was estimated on the basis of the data collected in the survey. The egg production from improved layers was estimated from the data collected from commercial poultry farms. This improved egg production was estimated for the State as a whole and on yearly basis. The details are given in the table numbers 36, 37, 38 and 39.

TABLE NO. 36

Estimated egg production from Deshi layers during  
Summer Season

Sr.No.	Group of Districts	Estimated No. of layers (lakhs)	Laying percentage	Total egg production (lakhs)
1	2	3	4	5
1.	Gr. Bombay	0.70	31.61	26.91
2.	Thane, Raigad	7.24	34.46	304.50
3.	Ratnagiri, Sindhudurg	8.41	24.30	249.41
4.	Nashik, Dhule, Jalgaon	6.19	35.78	270.21
5.	Ahmednagar, Pune	14.46	34.52	603.73
6.	Satara, Sangli, Kolhapur	15.26	34.78	647.46
7.	Solapur, Latur, Osmanabad, Beed	9.95	28.00	339.76
8.	Aurangabad, Jalna, Buldhana	2.89	28.72	101.30
9.	Parbhani, Nanded	1.97	32.05	77.42
10.	Akola, Amravati, Yavatmal	4.84	25.90	153.00
11.	Wardha, Nagpur, Bhandara	3.71	32.53	147.11
12.	Gadchiroli, Chandrapur	3.23	29.19	115.14
State as a whole		78.85 ( 8.82)	31.61 ( 9.24)	3040.65 ( 12.59)

Note :- Figures in brackets indicate percentage standard errors.

TABLE NO. 37

Estimated egg production from Deshi layers during  
the rainy season

Group No.	Group of Districts	Estimated No. of layers (in lakhs)	Laying percen- tage	Total egg produ- ction (lakhs)
1	2	3	4	5
1.	Gr. Bombay	: 0.70	32.68	28.05
2.	Thane, Raigad	: 6.65	35.44	289.73
3.	Ratnagiri, Sindhudurg	: 6.95	31.29	267.44
4.	Nashik, Dhule, Jalgaon	: 6.74	32.08	266.04
5.	Ahmednagar, Pune	: 13.99	35.56	612.18
6.	Satara, Sangli, Kolhapur	: 15.80	32.36	628.88
7.	Solapur, Latur, Osmanabad, Deed	: 10.04	30.29	374.05
8.	Aurangabad, Jalna, Buldhana	: 2.85	32.64	114.28
9.	Parbhani, Nanded	: 2.05	33.53	84.67
10.	Akola, Amravati, Yavatmal	: 5.11	30.99	194.63
11.	Wardha, Nagpur, Bhandara	: 3.74	32.60	150.05
12.	Gadchiroli, Chandrapur	: 3.78	30.45	141.49
State as a whole		: 78.40	32.68	3151.49
		( 4.97 )	( 11.72 )	( 5.26 )

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE 10. 38

Estimated egg production from Deshi layers during Winter season

Group No.	Group of Districts	Estimated No. of layers (lakhs)	Laying percentage	Total egg production (lakhs)
1	2	3	4	5
1.	Gr, Bombay	0.53	31.76	20.32
2.	Thane, Raigad	6.64	35.16	280.09
3.	Ratnagiri, Sindhudurg	7.94	28.87	275.28
4.	Nashik, Dhule, Jalgaon	8.31	30.68	306.20
5.	Ahmednagar, Pune	18.60	32.02	714.65
6.	Satara, Sangli, Kolhapur	17.53	32.52	686.01
7.	Solapur, Latur, Osmanabad, Beed	10.19	32.23	394.08
8.	Aurangabad, Jalna, Buldhana	3.11	27.61	102.95
9.	Parbhani, Nanded	2.08	33.91	84.61
10.	Akola, Amravati, Yavatmal	5.43	31.89	207.70
11.	Wardha, Nagpur, Bhandara	4.12	30.37	150.05
12.	Gadchiroli, Chandrapur	3.31	31.71	125.80
	State as a whole	87.84 ( 5.68)	31.76 ( 9.57)	3347.74 ( 6.46)

Note :- Figures in brackets indicate percentage standard errors.

TABLE NO. 39

Estimated total egg production during the year  
(Overall)

Group No.	Group of Districts	Estimated No. of layers (lakhs)	Laying percentage	Total egg production (lakh)
1	2	3	4	5
<u>FOR DESHI LAYERS :-</u>				
1.	Gr. Bombay	0.64	32.23	75.28
2.	Thane, Raigad	6.84	35.02	874.32
3.	Ratnagiri, Sindhudurg	7.77	27.93	792.13
4.	Nashik, Dhule, Jalgaon	7.08	32.60	842.45
5.	Ahmednagar, Pune	15.63	33.82	1935.56
6.	Satara, Sangli, Kolhapur	16.22	33.15	1962.35
7.	Solapur, Latur, Osmanabad, Beed	10.06	30.17	1107.89
8.	Aurangabad, Jalna, Bulchana	2.95	29.58	318.53
9.	Parbhani, Nanded	2.03	33.25	246.40
10.	Akola, Amravati, Yavatmal	5.13	29.66	555.33
11.	Wardha, Nagpur, Bhandara	3.86	31.74	447.21
12.	Gadchiroli, Chandrapur	3.44	30.46	382.43
Overall for Deshi layers		81.70 ( 3.84)	31.99 ( 5.89)	9539.88 ( 4.93)
Improved layers		38.97	70.41	10026.00
Overall for Deshi + Improved		120.67	44.42	19565.88

Note :- Figures in brackets indicate percentage standard errors.

The total egg production for the State, during the year was estimated as 19565.88 lakhs. Out of this, the contribution from Deshi layers was 49 percent and from improved layers 51 percent.

The overall eggs obtained per deshi layer per year were 117 and from improved layer were 257 per capita per annum availability of eggs was 27 during the year under report, on the basis of project population of the year under report.

4.3.1 The estimated egg production in the State, during the year 1987-88, 1988-89 and 1989-90 are presented in table no. 40.

TAB. NO. 40

Estimated egg production in Maharashtra State during 1987-88, 1988-89 and 1989-90

Group No.	Group of Districts	1987-88			1988-89			1989-90		
		Estima- ted layers (lakh)	Laying percen- tage	Egg produ- ction (lakh)	Estima- ted layers (lakh)	Laying percen- tage	Egg produ- ction (lakh)	Estima- ted layers (lakhs)	Laying percen- tage	Egg produ- ction (lakh)
1	2	3	4	5	6	7	8	9	10	11
1.	Gr. Bombay	: 0.70	32.55	83.12	0.70	31.76	81.14	0.64	32.23	75.23
2.	Thane, Raigad	: 6.88	33.80	852.06	6.78	34.81	861.55	6.84	35.02	874.32
3.	Ratnagiri, Sindhudurg	: 6.53	30.74	734.13	8.26	25.52	769.29	7.77	27.93	792.13
4.	Nashik, Dhule, Jalgaon	: 6.44	33.97	800.27	6.65	33.59	815.26	7.08	32.60	842.45
5.	Ahmednagar, Pune	: 14.73	33.64	1819.32	15.38	33.75	1894.44	15.68	33.82	1935.56
6.	Satara, Sangli, Kolhapur	: 15.60	33.18	1894.89	16.39	32.16	1924.20	16.22	33.15	1962.35
7.	Solapur, Latur, Osmanabad, Beed	: 8.81	32.15	1036.54	9.08	31.26	1036.18	10.06	30.17	1107.89
8.	Aurangabad, Jalna, Buldhana	2.75	30.24	304.39	2.79	30.14	306.92	2.95	29.58	318.53
9.	Parbhani, Nanded	: 1.99	32.23	235.05	1.99	33.24	241.45	2.03	33.25	246.40
10.	Akola, Amravati, Yavatmal	: 4.60	30.71	517.50	4.60	31.70	532.32	5.13	29.66	555.33
11.	Wardha, Nagpur, Bhandara	: 3.81	30.90	431.07	3.84	31.26	438.19	3.86	31.74	447.21
12.	Gadchroli, Chandrapur	: 3.28	30.44	365.07	3.26	30.98	368.66	3.44	30.46	382.43
Overall Deshi layers		: 76.17	32.55	9073.41	79.72	31.86	9269.60	81.70	31.99	9539.88
Improved layers		: 31.86	69.40	8092.44	34.34	69.59	8722.00	38.97	70.41	10026.00
Deshi + Improved layers		: 108.03	43.42	17165.85	114.06	43.22	17991.60	120.67	102.40	19565.88

#### 4.4 UTILISATION OF EGGS IN POULTRY KEEPER HOUSEHOLDS :-

From the poultry keeper households, data regarding production and disposal of eggs on the previous day of the visit, were also collected.

It is found from the data ~~xx~~ that out of the total eggs produced 47 percent were disposed off at home for table purpose, while 20 percent were kept for hatching. About 28 percent eggs were sold out for table purpose and 2 percent for hatching purpose. It is noticed that there ~~xxxx~~ was about 3 percent breakage and spoilage in the total number of eggs produced.

#### 4.5 MORTALITY IN POULTRY :-

Details regarding deaths of poultry birds occurred due to various causes during the last four months prior to the visit in the poultry keeper households were collected and the same is presented in table no. 41.

TABLE NO. 41

Percentage distribution of deaths in Deshi poultry birds according to various causes of deaths

Sr. No.	Category of birds	Percentage of deaths due to					Annual mortality
		Diseases	Physical/mechanical forces	Attack of animals	Attack of birds	Other reasons	
1	2	3	4	5	6	7	8
1.	Cocks	: 3.6	0.9	1.3	-	0.5	6.3
2.	Hens	: 2.4	0.2	0.6	-	0.3	3.5
3.	Cockerels	: 4.9	1.4	5.2	0.4	0.2	12.1
4.	Pullets	: 4.5	0.9	4.5	0.4	0.2	10.5
5.	Chicks	: 7.7	2.3	7.1	5.5	0.7	23.3
	Overall	: 4.6	1.1	3.5	1.9	0.4	11.5
		(40.0)	(9.6)	(30.4)	(16.5)	(3.5)	(100.0)

Note :- Figures in brackets indicate percentage of poultry birds died due to various reasons.



It is observed that maximum deaths occurred to diseases (40 percent) followed by attack of animals (30 percent). The deaths due to physical or mechanical forces such as excess of heat or cold, etc. and due to attack of birds were about 10 and 16 percent respectively.

The annual mortality in poultry birds was observed to be 11.5 percent, it being maximum in chicks (about 23 percent) and minimum in hens (about 3.5 percent).

The disease-wise mortality classification in poultry is presented in table no. 42.

TABLE NO. 42

Disease-wise mortality classification in poultry

Sr.No.	Category of birds	Percentage of deaths due to				Total
		Ranikhet	Diarrhoea	Fowl Pox	Undiagnosed diseases	
1	2	3	4	5	6	7
1.	Cocks	: 62.7	6.7	4.3	26.3	100.0
2.	Hens	: 41.8	12.3	12.6	33.3	100.0
3.	Cockerels	: 44.4	11.8	17.4	26.4	100.0
4.	Pullets	: 45.7	15.9	15.0	23.4	100.0
5.	Chicks	: 22.0	39.0	18.8	20.2	100.0
	Total	: 32.7	26.9	16.2	24.2	100.0

Amongst the birds which died due to diseases about 33 percent died due to Ranikhet, 27 percent died due to Diarrhoea and 16 percent died due to fowl pox, remaining 24 percent birds died due to other undiagnosed diseases.

#### 4.6 FEEDING PRACTICES OF POULTRY BIRDS :-

It is a common practice in villages to feed the birds with grains and cereals, twice in a day, once in the morning and then in the evening. The data on feeding are mainly collected for deshi birds only. Very few households in the villages used readymade poultry feed. Table no. 43 gives the information about grains fed either alone or in combination to the poultry birds in addition to what the birds may have consumed from the surrounding areas.

TABLE NO. 43

Households feeding different types of feed and average quantity fed per day/bird

Sr.No.	Name of feed	Percentage of households feeding the feed	Percentage of birds fed with	Average quantity of feed fed per bird per day (Gm.)
1	2	3	4	5
1.	Jawar	: 47.45	40.91	15
2.	Rice	: 24.53	18.68	19
3.	Bajra	: 9.35	11.09	20
4.	Jawar + Bajra	: 5.13	6.12	23
5.	Rice + Nagali	: 5.17	4.62	32
6.	Jawar + Rice	: 4.43	6.01	17
7.	Nachani	: 3.06	2.17	20
8.	Wheat	: 0.72	0.57	15
9.	Mixed cereals	: 0.25	0.31	13
10.	Readymade feed	: 0.10	9.52	100
	Overall	: 100.00	100.00	27

It was observed that the major constituents of the feed fed to poultry birds were Jawar either alone or in combination followed by Rice. The overall average quantity of feed fed per day was 27 Grams.

#### 4.7 COMMERCIAL POULTRY FARMS:-

During the year under report information about egg production alongwith allied information was collected from commercial poultry farms. Some important observations are tabulated from the data.

The information was collected from 54 farms and about 10 lakh layer birds. The table below indicates percentage distribution of farms according to layer strength and annual mortality percentage observed.

TABLE NO. 44Annual Mortality Percentage

Sr.No.	Size of Poultry Farm	No. of farms	Total no. of birds observed	Mortality percentage
1	2	3	4	5
1.	Upto 1000	1	985	12.99
2.	1001 - 5000	15	42,358	5.02
3.	5001 - 10000	6	47,559	5.61
4.	10001 - 15000	10	1,21,231	8.91
5.	15001 - 20000	6	1,07,123	13.80
6.	20001 - 25000	2	49,164	16.83
7.	25001 - 30000	2	57,036	5.00
8.	30001 - 35000	3	95,407	13.85
9.	35001 - 40000	4	1,51,486	20.12
10.	40001 - 45000	2	86,878	10.52
11.	45001 - 50000	2	97,209	16.19
12.	50001 & above	3	1,80,810	11.40
Total all Farms		56	10,37,296	12.61

From the data collected from commercial poultry farms, it was observed that in some of the farms the high mortality occurred due to Dermatitis, prolapse, Egg bond, Ranikhet disease, etc.

LAYING PERCENTAGE IN COMMERCIAL FARMS :-

Data collected from the commercial poultry farms was grouped as per the size of the farms and laying percentage was worked out, the same is given in Table no. 45.

TABLE NO. 45Laying percentage in commercial poultry farms

Sr.No.	Size of the farm according to average number of layers	Laying percentage
1	2	3
1.	0 - 1,000	71.12
2.	1001 - 5,000	68.96
3.	5001 - 10,000	69.84
4.	10001 - 15,000	64.49
5.	15001 - 20,000	71.18
6.	20001 - 25,000	68.27
7.	25001 - 30,000	69.59
8.	30001 - 35,000	57.32
9.	35001 - 40,000	N.A.
10.	40001 - 45,000	72.88
11.	45001 - 50,000	N.A.
12.	50,001 & above	68.82
Total (overall)		70.41

It was observed that farms having layers 40,000 to 45,000 had highest laying percentage.

CHAPTER NO. VWOOL PRODUCTION GOAT MILK PRODUCTION AND MEAT PRODUCTION5.1 WOOL PRODUCTION :-

From the data collected in the survey, it was observed that sheep were reared in 0.9 percent households and there were 18.6 percent villages having sheep.

Villages having sheep were classified according to total number of sheep in the villages.

TABLE NO. 46Distribution of villages according to sheep population

Sr.No.	Number of sheep	Percentage of villages			
		Summer	Rainy	Winter	Overall
1	2	3	4	5	6
1.	Upto 10	20.0	3.0	7.1	11.3
2.	11 to 20	6.7	-	7.1	4.7
3.	21 to 30	13.3	9.1	21.5	14.2
4.	51 to 100	26.7	9.1	28.6	21.7
5.	101 to 200	11.1	30.3	10.7	17.0
6.	201 to 400	11.1	18.2	3.6	11.3
7.	401 to 600	4.4	15.1	3.6	7.5
8.	601 to 800	4.4	3.0	7.1	4.7
9.	801 to 1000	-	6.1	7.1	3.8
10.	Above 1000	2.3	6.1	3.6	3.8
Total		100.0 ( 45 )	100.0 ( 33 )	100.0 ( 28 )	100.0 (106)

Note :- Figures in brackets indicate number of villages.

It was observed that 16 percent of the villages were having sheep upto 20, while about 30 percent were having 21 to 100 sheep per village.

5.2 NUMBER OF SHEEP OBSERVED :-

A total of 7,591 sheep from 257 flocks were observed for sheep rearing practices. The details are given in table no. 47.

TABLE NO. 47No. of sheep observed

Sr.No.	Type of flock	No. of flocks	Number of Sheep				Total
			Rams	Ewes	Male Lambs	Female Lambs	
1	2	3	4	5	6	7	8
1.	Stationary	231	321	4827	697	793	6638
2.	Migratory	26	24	598	164	167	953
Total		257	345	5425	861	960	7591

It is observed from the table no. 47 that about 87 percent sheep were from stationary flocks and remaining 13 percent sheep from migratory flocks.

### 5.3 ESTIMATED WOOL PRODUCTION :-

The estimates of wool production in the state, worked-out for 2 shearing seasons, are presented in table no. 48.

TABLE NO. 43

Estimated Wool Production

Sr.No.	Season	Estimated no.of sheep (lakh)	Estimated no.of sheep shorn (lakhs)	Average wool yield per sheep shorn (kg.)	Total wool production (M.T.)
1	2	3	4	5	6
1) <u>RAINY</u> :-					
	i) Rams+Whether	2.58	2.54	0.327	83.036
	ii) Ewes	19.26	18.92	0.291	550.479
	iii) Lambs	7.09	3.95	0.156	61.716
	Total	28.93	25.41	0.274	695.231
2) <u>WINTER</u> :-					
	i) Rams+Whether	2.59	2.52	0.321	80.899
	ii) Ewes	18.96	18.72	0.305	570.825
	iii) Lambs	7.45	3.91	0.164	64.201
	Total	29.00	25.15	0.285	715.925
3) <u>OVERALL</u> :-					
	i) Rams+Whether	2.59	2.53	0.648	163.935
	ii) Ewes	19.11	18.82	0.596	1121.304
	iii) Lambs	7.27	3.93	0.329	125.917
	Total	28.97	25.28	0.558	1411.156

The estimated number of Rams/Whethers, ewes and lambs for rainy season were 2.58 lakhs, 19.26 lakhs and 7.09 lakhs respectively. The same for winter season were 2.59 lakhs, 18.96 lakhs and 7.27 lakhs.

The overall average estimated wool yield per sheep shorn worked-out to be 558 Grams, it being 596 Grams per ewe and 648 Grams per adult male. The estimated wool production for the State during the year was about 1411 M.T.

5.4 MORTALITY IN SHEEP :-

The data regarding deaths due to various reasons was collected from the sheep keeper households at the time of enumeration. It was observed that the annual mortality in sheep was found to be 6.1 percent.

5.5 SAMPLE SIZE OBSERVED FOR GOAT MILK PRODUCTION AND GOAT REARING PRACTICES

Of the total villages, selected in 94.9 percent villages goats were observed. A total number of 11,590 of goat keeper households and from these 13,519 goats in-milk were observed for goat milk production. It was observed that the percentage of in-milk goats to milch goats were about 47.6 percent during the year under report.

5.6 ESTIMATED GOAT MILK PRODUCTION

The details about estimates of goat milk production for groups of districts in State, during the three seasons and for the entire year are given in table no. 49,50,51 and 52 respectively.

TABLE NO. 49

Estimated goat milk production for summer season

Group No.	Group of Districts	Estimated No. of in-milk goats (lakhs)	Average daily milk yield/goat in-milk (kg.)	Total milk production ('000' M.T.)
1	2	3	4	5
1.	Gr. Bombay	0.04	0.119	0.063
2.	Thane, Raigad	0.71	0.119	1.035
3.	Ratnagiri, Sindhudurg	0.32	0.119	0.465
4.	Nashik, Dhule, Jalgaon	3.43	0.203	8.493
5.	Ahmednagar, Pune	4.01	0.180	8.813
6.	Satara, Sangli, Kolhapur	3.06	0.260	9.705
7.	Solapur, Latur, Osmanabad, Beed	1.19	0.228	11.639
8.	Aurangabad, Jalna, Buldhana	2.86	0.178	6.220
9.	Parbhani, Nanded	1.85	0.158	3.567
10.	Akola, Amravati, Yavatmal	2.73	0.123	4.091
11.	Wardha, Nagpur, Dhondara	1.61	0.142	2.781
12.	Gadchiroli, Chandrapur	1.10	0.119	1.594
	State Total	25.91	0.185	58.466



TABLE NO. 50Estimated goat milk production for rainy season

Group No.	Group of Districts	Estimated no. of in-milk goats (lakhs)	Average daily milk yield per goat in-milk (kg.)	Total milk production ('000' M.T.)
1	2	3	4	5
1.	Gr. Bombay	: 0.04	0.150	0.080
2.	Thane, Raigad	: 0.90	0.150	1.655
3.	Ratnagiri, Sindhudurg	: 0.30	0.150	0.549
4.	Nashik, Dhule, Jalgaon	: 3.36	0.194	8.009
5.	Ahmednagar, Pune	: 3.49	0.235	10.096
6.	Satara, Sangli, Kolhapur	: 2.80	0.218	7.515
7.	Solapur, Latur, Osmanabad, Beed	: 3.77	0.227	10.531
8.	Aurangabad, Jalna, Buldhana	: 2.23	0.189	5.175
9.	Parbhani, Nanded	: 2.12	0.150	3.916
10.	Akola, Amravati, Yavatmal	3.35	0.117	4.828
11.	Wardha, Nagpur, Bhandara	: 1.90	0.119	2.868
12.	Gadchiroli, Chandrapur	: 0.93	0.121	1.472
	State Total	: 25.25	0.183	56.694

.. 52 ..

TABLE NO. 51

Estimated goat milk production for winter season

Group No.	Group of Districts	Estimated no. of in-milk goats (laks)	Average daily milk yield per in-milk goat (kg.)	Total milk production ('000' M.T.)
1	2	3	4	5
1.	Gr. Bombay	0.05	0.127	0.070
2.	Thane, Raigad	0.72	0.127	1.106
3.	Ratnagiri, Sindhudurg	0.35	0.127	0.527
4.	Nashik, Dhule, Jalgaon	4.02	0.217	10.475
5.	Ahmednagar, Pune	4.14	0.202	10.027
6.	Satara, Sangli, Kolhapur	2.71	0.243	7.898
7.	Solapur, Latur, Osmanabad, Beed	4.87	0.202	11.811
8.	Aurangabad, Jalna, Buldhana	2.94	0.204	7.200
9.	Parbhani, Nanded	1.78	0.181	3.867
10.	Akola, Amravati, Yavatmal	3.48	0.103	4.306
11.	Wardha, Nagpur, Bhandara	2.06	0.120	2.973
12.	Gadchiroli, Chandrapur	1.15	0.095	1.308
State Total		28.27	0.181	61.568

TABLE NO. 52

Estimated goat milk production for the year (overall)

Group No.	Group of Districts	Estimated no. of in-milk goats (lakhs)	Average daily milk yield per in-milk goat (kg.)	Total milk production ('000' M.T.)
1	2	3	4	5
1.	Gr. Bombay	0.04	0.146	0.213
2.	Thane, Raigad	0.78	0.133	3.795
3.	Ratnagiri, Sindhudurg	0.32	0.132	1.542
4.	Nashik, Dhule, Jalgaon	3.60	0.205	26.978
5.	Ahmednagar, Pune	3.88	0.204	28.937
6.	Satara, Sangli, Kolhapur	2.86	0.241	25.118
7.	Solapur, Latur, Osmanabad, Beed	4.27	0.218	33.982
8.	Aurangabad, Jalna, Buldhana	2.68	0.190	18.595
9.	Parbhani, Nanded	1.92	0.162	11.349
10.	Akola, Amravati, Yavatmal	3.19	0.114	13.224
11.	Wardha, Nagpur, Bhandara	1.88	0.126	8.622
12.	Gadchiroli, Chandrapur	1.06	0.113	4.373
State Total		26.48	0.133	176.728

It is observed from table no. 52 that total goat milk production for the state was estimated as 176.728 thousand M.T. during the year. The average milk yield per goat in-milk per day was 183 Grams.

5.7 MORTALITY IN GOATS

The data regarding deaths due to various reasons was collected from the goat keeper households at the time of enumeration. It was observed that the annual mortality in goats was found to be 4.8 percent.

5.8 ESTIMATED MEAT PRODUCTION

The meat production from different species of livestock was estimated for the State and on the yearly basis. The details are given in table no. 53.

TABLE NO. 53

Estimated meat production

Sr.No.	Species	Average meat production per animal (kg.)	Estimated no.of animals slaughtered (lakhs)	Total meat production ('000' m.t.)
1	2	3	4	5
1.	Cattle	: 120.345	4.23	50.928
2.	Buffalo	: 134.615	2.73	36.711
3.	Sheep	: 10.777	16.95	18.271
4.	Goat	: 10.250	37.30	38.232
5.	Pig	: 20.700	2.20	4.553
Total		:	-	148.695

From the above table it is seen that the average meat produced per sheep is higher than that of goat. Out of the total meat production, 34 percent was from cattle, 25 percent from buffaloes, 12 percent from sheep, 26 percent from goats and remaining 3 percent from pigs.

5.9 HIDES AND SKINS PRODUCTION

The number of hides and skins obtained during the year were worked-out for the state as a whole. The details are given in table no. 54 below.

TABLE NO. 54

Estimated number of hides and skins

Sr.No.	Production of	Category	Estimated no. of hides/skins (lakhs)
1	2	3	4
1.	Hides	: Cattle	4.51
		Buffalo	2.92
		Total	7.43
2.	Skins	: Sheep	17.13
		Goat	37.75
		Total	54.88

TABLE NO. 55

Comparative statement showing estimated annual production of milk, egg, wool and meat in Maharashtra State from the year 1970-71 to 1989-90

Sl. No. Year		Milk ('000'M.T.)	Eggs (Crores)	Wool (M.T.)	Meat ('000'M.T.)
1	2	3	4	5	6
1.	1970-71	: 1,062	69	1,025	70
2.	1971-72	: 1,036	66	1,119	70
3.	1972-73	: 949	67	911	76
4.	1973-74	: 1,003	70	936	76
5.	1974-75	: 1,195	73	970	79
6.	1975-76	: 1,280	77	1,016	78
7.	1976-77	: 1,304	78	890	83
8.	1977-78	: 1,522	81	923	93
9.	1978-79	: 1,540	91	1,047	106
10.	1979-80	: 1,635	105	1,125	122
11.	1980-81	: 1,756	115	1,217	147
12.	1981-82	: 1,909	124	1,245	160
13.	1982-83	: 2,009	129	1,304	158
14.	1983-84	: 2,228	135	1,309	151
15.	1984-85	: 2,358	143	1,311	160
16.	1985-86	: 2,466	151	1,339	159
17.	1986-87	: 2,459	159	1,357	154
18.	1987-88	: 2,657	172	1,373	160
19.	1988-89	: 2,800	180	1,388	147
20.	1989-90	: 3,266	196	1,411	149

Note :- Milk production upto the year 1976-77 is exclusive of goat milk as no survey was conducted for goat milk production.

CHAPTER NO. VI

SUMMARY

Integrated Survey Scheme has been implemented by the Department for estimation of annual production of four important livestock products, viz. Milk, Egg, Wool and Meat and to study the livestock keeping practices followed in the State. The present report deals with the results obtained from the data collected during 1989-90.

6.1 SAMPLING DESIGN :-

The sampling design for the survey was a multistage stratified random sampling. Thirty districts of the state were divided into 12 groups, each consisting of about 1 to 4 districts. Gr. Bombay district was treated as one separate group. From remaining 11 groups of districts, 20 villages were selected randomly from each group for every season and one survey assistant was allotted the work of five villages for collection of data.

6.2 RESULTS

1. A total 570 villages were visited by the Survey Assistants for collection of data. The average number of households per village were 182.

2. About 22 percent households had no livestock or poultry. About 61 percent households had bovine, and 32 percent households had poultry. While 25 percent had goats and only 1 percent households reared sheep.

3. The data regarding bovine keeping practices were collected for 40,267 bovines from 10,010 bovine keeper households and a total of 13,549 animals were observed for milk production.

4. The estimated number of in-milk cows was 24.27 lakhs and that of in-milk buffaloes was 14.51 lakhs.

5. The average daily milk yield per in-milk cow was estimated as 1.805 kg. and for in-milk buffalo as 2.816 kg.

6. The annual milk production in the state was estimated as 3089 thousand tonnes (from bovines) and 3,266 ('000' M.T.) inclusive of goat milk.

7. Per capita per day availability of milk was found to be 117 Grams (cow milk + buffalo milk) and 123 Grams if goat milk is included.

8. About 15 percent cattle and 11 percent buffaloes were kept on grazing alone.

9. The average quantity of the dung dropped in the shed was 3.1 kg. per day per animal. The total quantity of dung collected during the year for the state was estimated as 27,756 thousand M.T.

10. The annual mortality observed in cattle class was about 1.5 percent and that in buffaloes 3.9 percent.

11. A total of 13,776 households were observed for egg production and poultry rearing practices. From these about 64 thousand layers were observed for egg production.

12. The estimated number of deshi layers for the state during the year was 81.7 lakhs and that of improved layers was 38.97 lakhs. The laying percentage observed were 31.99 and 70.41 in deshi layers and improved layers, respectively.

13. The estimated total egg production was worked-out as 195.66 crores. Out of this, the contribution from deshi layers was 95.40 crores and remaining 100.26 crores from improved layers.

14. The per capita per annum availability of eggs was 27 eggs during the year under report.

15. The daily average quantity of grains fed per poultry bird was 27 Grams.

16. The annual mortality in poultry was about 11.5 percent, it being maximum in chicks (about 23 percent).

17. The average wool yield per sheep shorn during the year was 588 Grams . The estimated annual wool production for the state was 1411 tonnes.



18. The annual mortality in sheep was 6.1 percent.

19. The average daily milk yield per goat in-milk was 183 Grams. The estimated annual goat milk production was 177 thousand tonnes.

20. The annual mortality percentage in goats was 4.6 .

21. The average meat production per animal was 120.3 kg. for cattle, 134.6 kg. for buffalo, 10.8 kg. for sheep, 10.3 kg. for goat and 20.7 kg. for pigs. The total annual meat production was estimated as 149 thousand tonnes.

22. The number of pieces of hides obtained during the year was estimated as 7.43 lakhs and that of skins as 54.88 lakhs.

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GOVERNMENT OF MAHARASHTRA

**REPORT ON**  
**MILK, EGG, WOOL AND**  
**MEAT PRODUCTION**  
**AND**  
**LIVESTOCK AND POULTRY**  
**KEEPING PRACTICES IN**  
**MAHARASHTRA STATE**  
**FOR THE YEAR 1990-91**

## P R E F A C E

The Department of Animal Husbandry, Maharashtra State, has launched an Integrated Sample Survey Scheme, since 1970-71, to study the annual status of the major Livestock Products and Livestock and Poultry Keeping Practices, followed in the State. So far, twenty such annual surveys have been conducted in the State in succession. The present report is based on the findings of the twenty-first annual survey in the series.

The report contains information on Milk, Egg, Wool and Meat production estimates in the State, during 1990-91. It also contains information about feeding and management practices followed in livestock and poultry, utilisation pattern of Livestock Products, Mortality rates of Livestock and Poultry, etc.

The credit of this survey goes to the field staff as well as the office staff of the Integrated Survey Scheme. We are also grateful to the Indian Agricultural Statistics Research Institute, New Delhi for providing the sampling technique for the survey.

It is hoped that the findings of the survey will be useful to the planners, administrators and for those interested in Animal Husbandry and Dairying. The results of the survey are given at the beginning of the report in the form of "RESULTS AT A GLANCE" for the sake of convenience.

Place - Pune-411 001.

Date - 3/11/1992.

A. B. KULKARNI,  
DIRECTOR

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SOME SALIENT RESULTS AT A GLANCE FROM THE SURVEY ON  
production of Milk, Egg, Wool and Meat and study of livestock and  
poultry keeping practices in Maharashtra State during the year  
1990-91

Sr.No.	Item	Unit	Figure
(1)	(2)	(3)	(4)
<u>1. Size of sample observed :- :</u>			
	1) Districts observed	No.	30
	ii) Villages observed	"	590
<u>2. Characteristics of villages:-</u>			
	i) Having bovine	%	100.0
	ii) Having Poultry	"	96.9
	iii) Having sheep	"	19.7
	iv) Having goats	"	92.0
	v) Average no. of households per village	No.	186
<u>3. Households rearing :-</u>			
	i) Bovine	%	61.81
	ii) Poultry	"	32.17
	iii) Sheep	"	0.74
	iv) Goats	"	26.06
	v) No Livestock & Poultry	"	22.49
<u>4. Availability of facility for Veterinary Aid :-</u>			
	i) Within village	%	5.2
	ii) Upto 5 Kms.	"	51.3
	iii) Average distance of Vety. Aid	Kms.	5.9
<u>II) MILK PRODUCTION AND BOVINE KEEPING PRACTICES :-</u>			
<u>1) Size of sample observed :-</u>			
	i) Bovine keeper households	No.	10922
	ii) Bovine observed for detailed study	"	44994
	<u>iii) In-milk animals for milk recording :-</u>		
	a) Cows		
	i) Indigenous	No.	8627
	ii) C.B.	"	1012
	b) Buffaloes	"	4201

(1)	(2)	(3)	(4)
2. <u>Estimated No. of in-milk animals :-</u>			
1) <u>Cows in-milk :-</u>			
a) Doshi	:	Lakhs	22.05
b) Crossbred	:	"	3.73
c) Total	:	"	25.78
ii) Buffaloes in-milk	:	"	16.25
iii) Goats in-milk	:	"	30.29
3. <u>Average daily milk yield per animal in-milk :-</u>			
i) <u>Cow :-</u>			
a) Doshi	:	Kg. (Litre)	1.245 (1.211)
b) Crossbred	:	"	6.334 (6.161)
c) Overall	:	"	1.981 (1.927)
ii) Buffalo	:	"	2.832 (2.755)
iii) Goat	:	"	0.173 (0.168)
4. <u>Estimated annual milk Production :-</u>			
i) <u>Cow milk :-</u>			
a) Doshi	:	Lakh kg. (Lakh ltr.)	10022.68 (9749.06)
b) Crossbred	:	"	8617.48 (8382.22)
ii) Buffalo milk	:	"	16795.53 (16337.01)
iii) Goat milk	:	"	1918.77 (1866.39)
iv) Total	:	"	37354.46 (36334.68)
5. <u>Per capita per day availability of milk :-</u>			
a) Cow + Buffalo	:	Gm.	131
b) Cow + Buffalo + Goat	:	"	138
6. <u>Feeding practices of Bovine :-</u>			
i) Cattle kept on grazing alone	:	%	14
ii) Buffaloes kept on grazing alone	:	"	12

(1)	(2)	(3)	(4)
7. Average quantity of feed/ fodder fed per day per animal (kept on grazing alone also):-			
a) Cattle:	i) Green	Kg.	3.021
	ii) Dry	--"	3.840
	iii) Concentrate	--"	0.125
b) Buffaloes	i) Green	--"	3.716
	ii) Dry	--"	3.410
	iii) Concentrate	--"	0.423
8. Average quantity of dung collected in cattle shed per bovine per day		--"	3.048
9. Estimated annual quantity of dung collected		'000' M.T.	28515
10. Annual mortality in bovine:-			
	i) Cattle	%	1.5
	ii) Buffalo	--"	3.8
<b>III) EGG PRODUCTION AND POULTRY KEEPING PRACTICES :-</b>			
1) <u>Size of sample observed:-</u>			
	i) Total poultry keeper households	No.	20864
ii) <u>Total poultry birds:-</u>			
	a) Cocks	--"	10600
	b) Hens	--"	62198
	c) Cockerels	--"	13189
	d) Pullets	--"	17271
	e) Chicks	--"	56452
	f) Total	--"	159710
2) <u>Estimated no. of layers:-</u>			
	a) Dashi	Lakhs	85.99
	b) Improved	--"	43.17
	c) Total	--"	129.16
3) <u>Average no. of eggs laid per layer per year :-</u>			
	a) Dashi	No.	114
	b) Improved	--"	258

(1)	(2)	(3)	(4)
4.	<u>Estimated annual egg production :-</u>		
a)	Dashi	: Lakh	9840.27
b)	Improved	: --	11138.00
c)	Total	: --	20978.27
5.	Per capita per annum availability of eggs	: No.	28
6.	<u>Average number of poultry birds per 100 poultry keepers :</u>		
a)	Cocks	: No.	51
b)	Hens	: --	298
c)	Cockerels	: --	63
d)	Pullets	: --	83
e)	Chicks	: --	271
f)	Total	: --	766
7.	Average feed supplied per poultry bird per day	: Gm.	21
8.	Annual mortality in poultry:	%	13.9
IV) WOOL PRODUCTION AND SHEEP REARING PRACTICES :-			
1.	<u>Sample size observed for detailed study:-</u>		
a)	No. of flocks	: No.	208
b)	No. of sheep	: --	6809
2.	<u>Estimated no. of sheep:-</u>		
i)	Rams/wethers	: Lakh	2.64
ii)	Ewes	: --	19.42
iii)	Lambs	: --	7.59
iv)	Total	: --	29.65
3.	<u>Estimated no. of sheep shorn:-</u>		
i)	Rams/wethers	: --	2.58
ii)	Ewes	: --	19.03
iii)	Lambs	: --	4.06
iv)	Total	: --	25.67
4.	<u>Estimated annual wool yield per sheep shorn :-</u>		
i)	Rams/wethers	: Kg.	0.642
ii)	Ewes	: --	0.598
iii)	Lambs	: --	0.323
iv)	Overall	: --	0.559



(1)	(2)	(3)	(4)
5.	Estimated annual wool production	M.T.	1435
6.	Mortality in sheep	%	6.3
<b>V) GOAT MILK PRODUCTION AND GOAT REARING PRACTICES :-</b>			
<b>1. Sample size observed :-</b>			
i)	Goat keeper households	No.	11615
ii)	In-milk goats for milk production	"	14890
2.	Average daily milk yield per goat in-milk	Kg. (Ltr.)	0.173 (0.168)
3.	Goats in-milk to milch goats	%	50.2
4.	Estimated no. of goats in-milk	Lakh (No.)	30.29
5.	Estimated total goat milk production	Lakh kg. (Lakh Ltrs.)	1918.77 (1866.39)
6.	Annual mortality of goats	%	4.7
<b>VI) MEAT PRODUCTION :-</b>			
<b>1) Average meat production per animal :-</b>			
i)	Cattle	Kg.	120.940
ii)	Buffalo	"	134.590
iii)	Sheep	"	10.590
iv)	Goat	"	10.240
v)	Pig	"	20.980
<b>2) Estimated no. of animals slaughtered :-</b>			
i)	Cattle	Lakh	3.97
ii)	Buffalos	"	2.13
iii)	Sheep	"	16.96
iv)	Goats	"	36.16
v)	Pigs	"	2.37
3)	Estimated annual meat production	'000' M.T.	135.613
<b>4) Estimated no. of :-</b>			
a)	Hides	Lakh piece	7.10
b)	Skins	"	53.78

CHAPTER NO. I

INTRODUCTION

The present report is based on the twenty-first Annual Integrated Survey, conducted by the Department of Animal Husbandry, Maharashtra State, for estimation of annual production of major Livestock Products viz. Milk, Egg, Wool and Meat and study of the livestock and poultry keeping practices followed during the year 1990-91.

The scheme was partially strengthened during 1984-85 and accordingly the data on production of milk and eggs were collected for groups of districts as per the revised plan, suggested by the Ministry of Agriculture, Animal Husbandry Statistics Division, Government of India, New Delhi.

1.2 DESCRIPTION OF THE SURVEY :-

The survey has been conducted all over the State, during all the three seasons of the year. The State consists of 30 districts with 303 Tahsils comprising 39,354 inhabited villages and 307 cities and town units as per 1981 human population census.

1.3 LIVESTOCK POPULATION :-

According to 1987 Livestock Census, the Maharashtra State, had 342.42 lakh livestock. This constituted 217.31 (63 percent) bovine, 91.91 lakh (27 percent), Goats, 28.73 lakh (8 percent), Sheep, 3.34 lakh, Pigs and remaining 1.13 lakh were horses, donkeys and mules. The total poultry was 2248 lakh.

TABLE NO. 1  
Comparison of livestock census figures

Sr. No.	Category	Population '000' as per 1987 Census	1982 Census	% increase in 1987 over 1982 Census
(1)	(2)	(3)	(4)	(5)
1.	Cattle	1,69,79	1,61,62	5.06
2.	Buffaloes	47,52	39,72	19.64
3.	Sheep	28,73	26,70	7.60
4.	Goats	91,91	77,05	19.29
5.	Pigs	3,34	3,01	10.96
6.	Total Poultry	2,47,69	1,98,44	24.82

It is seen from Table No. 1 that there is an increase in all types of Livestock as well as poultry over the previous census.

1.4 PERIOD OF FIELD WORK :

The data for the present survey was collected during all the three seasons of the year 1990-91 as shown below :-

1. Summer Season - March, 1990 to June, 1990
2. Rainy Season - July, 1990 to October, 1990
3. Winter Season - November, 1990 to February, 1991

1.5 SAMPLING PLAN :

A stratified multistage random sampling design has been adopted for the survey. The State was divided into 12 groups each consisting of about 1 to 4 districts, which have common geographical boundaries and topographical conditions. The groups of districts are treated as strata and are as follows.

<u>Group No.</u>	<u>Name of the Districts</u>
1.	Gr. Bombay
2.	Thane, Raigad
3.	Ratnagiri, Sindhudurg
4.	Nashik, Dhule, Jalgaon
5.	Ahmednagar, Pune
6.	Satara, Sangli, Kolhapur
7.	Solapur, Be. ed., Osmanabad, Latur

<u>Group No.</u>	<u>Name of the Districts</u>
8.	Aurangabad, Jalna, Buldhana
9.	Parbhani, Nanded
10.	Akola, Amravati, Yavatmal
11.	Wardha, Nagpur, Bhandara
12.	Chandrapur, Gadchiroli

Out of the total villages/towns in the State, 15 percent villages/towns were selected randomly from the 11 groups of districts, (excluding Gr. Bombay) in proportion to livestock and poultry population in these groups according to 1987 Livestock Census. These villages were equally divided into 3 seasons of the year. From these villages, 20 villages were selected randomly from each group of districts and 5 nearby villages were allotted to each survey assistant, for collecting data on Milk, Egg, Wool and Meat production and rearing practices of livestock and poultry.

The data on number of livestock and poultry was also collected from remaining 15 percent of the villages from the concerned Block Development Officers of Zilla Parishads.

On the basis of data collected from 20 such villages groupwise estimates for milk and egg were worked-out for a season. The State estimates for a season were obtained by pooling the groupwise estimates. By adding 3 seasonal estimates the annual estimates for the State were worked-out. The estimated number of productive animals was based on remaining 15 percent villages data received from Panchayat Samities in addition to 20 villages from each group of districts.

#### 1.6 PROGRAMME OF FIELD WORK :

For collection of data regarding production and rearing practices of livestock and poultry, one Survey Assistant was allotted 5 villages selected randomly afresh for each season from a group of districts. Such 4 Survey Assistants were working in each group. For Gr. Bombay district, one Survey Assistant was working and he collected the data about milk production and allied information by visiting about 20 stalls in a month, selected randomly. For remaining groups of districts, each Survey Assistant

visited selected villages in 3 to 4 rounds and in a round he made 3 days halt, for collection of data in each selected village. During the first round, he carried-out house to house complete enumeration of livestock and poultry. After completion of enumeration, he collected data as per the norms given in Table No. 2.

TABLE NO. 2

Details of data collection

Sr.No.	Schedule No.	Type of information collected	No. of households observed per day
(1)	(2)	(3)	(4)
1.	B <sub>1</sub>	Milk production and bovine keeping practices	4/2/2
2.	P <sub>2</sub>	Egg production and poultry keeping practices	5/5/10
3.	W <sub>1</sub> , W <sub>2</sub>	Sheep rearing practices and Wool production	3/3/3
4.	S <sub>1</sub>	Goat milk production and goat rearing practices	3/6/3
5.	T <sub>1</sub>	Meat production in households having livestock or poultry	10/20/10
6.	T <sub>3</sub>	Meat production and other by-products obtained through slaughter at District place slaughter house	- -

1.7 DETAILS OF DATA COLLECTED :

In this report, tables on milk, egg, wool and meat production estimates alongwith keeping practices of livestock and poultry are presented.

Details of data collected are given as follows :

1. Feeding practices of bovine and poultry
2. Utilisation of milk and eggs
3. Utilisation of dung
4. Mortality in bovine, poultry, sheep and goats.

1.8 STAFF

The following staff was sanctioned under the scheme during the year under report.

TABLE NO. 3

Sr.No.	Name of the post	Scale	No.of post#
(1)	(2)	(3)	(4)
1.	Assistant Director (MAHS, Jr.Class-I)	2200 - 3700	1
2.	Livestock Development Officer(MAHS,Class-II)	2000 - 3500	8
3.	Investigator	1640 - 2900	3
4.	Statistical Assistant	1200 - 2040	6
5.	Survey Assistant (Jr. Clerk Cadre)	950 - 1500	28
6.	Survey Assistant (Livestock Supervisor)	1200 - 1800	22
7.	Accountant	1200 - 2040	1
8.	Senior Clerk	1200 - 2040	2
9.	Junior Clerk	950 - 1500	1
10.	Peon	750 - 940	3
Total			75

The field data were collected by 45 Survey Assistants (1 Survey Assistant for Gr. Bombay and 4 each for remaining 11 groups of districts). Five Survey Assistants were kept as leave reserve. The Livestock Development Officer supervised the work of Survey Assistants by actually visiting the selected villages. The data so collected were scrutinised, compiled, tabulated and analysed by Statistical Assistants and Investigators. The Assistant Director was the overall incharge of the scheme for field work as well as administrative work.

The Deputy Director of Animal Husbandry(Statistics) gave valuable guidance in the conduct of survey and finalization of production estimates as well as report.

CHAPTER NO. IICHARACTERISTICS OF SAMPLE VILLAGES

2.1 During the year under report data of 570 villages were received on items such as land possessed , breeding, feeding and management practices followed and obtaining details regarding production and utilisation of milk, egg, wool and meat.

The distribution of villages having various categories of livestock and poultry is presented in Table No. 4.

TABLE NO. 4DISTRIBUTION OF VILLAGES HAVING LIVESTOCK/POULTRY

Sr.No.	Season	Percentage of villages having			
		Bovine	Poultry	Goats	Sheep
(1)	(2)	(3)	(4)	(5)	(6)
1.	Summer	100.0	97.4	93.2	20.0
2.	Rainy	100.0	95.9	92.3	19.5
3.	Winter	100.0	97.5	90.5	19.5
	Overall	100.0	96.9	92.0	19.7

It is seen from the table no. 4 that bovine were found in all the villages, while poultry and goats were found in 96.9 and 92.0 percent, villages respectively. Sheep were found in only 19.7 percent villages because sheep population is mainly concentrated in Pune division of the State.

2.2 NUMBER OF HOUSEHOLDS PER VILLAGE

During the year, Livestock and poultry were enumerated by Survey Assistants from a total of 1,09,017 households in 590 selected villages. The seasonwise distribution of these villages, according to number of households found per village is given in Table No. 5.

TABLE NO. 5

DISTRIBUTION OF VILLAGES ACCORDING TO NUMBER OF HOUSEHOLDS

Sr.No.	No. of households	Percentage of villages			
		Summer	Rainy	Winter	Overall
(1)	(2)	(3)	(4)	(5)	(6)
1) Upto	100	3.7	3.1	2.0	2.9
2) 101 to	150	29.5	25.6	22.0	25.6
3) 151 to	200	34.2	25.6	35.5	31.8
4) 201 to	250	21.1	25.1	30.0	25.5
5) 251 to	300	6.3	14.4	8.5	9.7
6) 301 to	350	4.2	5.7	1.0	3.6
7) 351 to	400	0.5	0.5	0.5	0.5
8) Above	400	0.5	-	0.5	0.4
Total		100.0	100.0	100.0	100.0
Average no. of households per village		181	189	187	186

Note :- Figures in brackets indicate number of villages observed.

It is seen from the above table, that about 2.9 percent villages had upto 100 households, 57.4 percent villages had in the range of 101 to 200 households while 35.2 percent and 4.5 percent villages had from 201 to 300 and more than 300 households per village respectively. The overall average number of households per village was found to be 186.

### 2.3 HOUSEHOLDS REARING LIVESTOCK AND POULTRY

The total enumerated households were classified according to particular kind of livestock and poultry possessed and the same is given in Table No. 6.



TABLE NO. 6

DISTRIBUTION OF HOUSEHOLDS ACCORDING TO TYPE OF LIVESTOCK AND POULTRY REARED

Sr. No.	Particulars	Percentage of households rearing					
		Bovine	Poultry	Goats	Sheep	Livestock / Poultry stock/ in combi- nation	No. Live- Poultry
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Households rearing only one type of Livestock or Poultry	27.60	9.41	5.43	0.06	-	-
2.	Total households rearing Livestock or Poultry in combination	61.81	32.17	26.06	0.74	34.96	22.49

From the total households observed, it was found that about 62 percent households reared bovine, 32.2 percent reared poultry and 26.1 percent households reared goats, either alone or in combination with other type of livestock or poultry.

2.4 GENERAL FACILITIES FOR THE VILLAGES

Information regarding facilities for veterinary aid, distance from market, for cattle feed, milk, etc., was collected for the selected villages and is given in Table No. 7.

TABLE NO. 7

DISTRIBUTION OF VILLAGES ACCORDING TO AVAILABILITY OF  
VARIOUS FACILITIES AND THEIR DISTANCE

Sr.No.	Facility	Percentage of villages for which it is available at a distance of (kms.)					Average distance in (kms.)
		0	0 to 5	5 to 5	5 to 10	Above 10	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Veterinary Aid	6.5	23.1	21.7	35.1	13.6	6.2
2.	Veterinary Dispensary	1.9	11.2	13.9	40.9	32.1	13.3
3.	Artificial Insemination	5.8	21.6	22.8	36.0	13.8	8.1
4.	Market for cattle feed	2.8	9.5	17.0	32.4	38.3	10.9
5.	Market for milk & milk products	10.5	10.2	11.1	49.5	18.7	7.9
6.	Market for cattle	0.5	6.7	6.9	32.6	53.3	12.4
7.	Market for egg	5.8	10.1	11.0	48.3	24.8	8.8
8.	Market for wool	-	2.8	7.2	28.9	61.1	18.0
9.	Market for meat	1.4	10.8	12.6	37.2	38.0	8.1

It may be observed that veterinary aid or veterinary dispensary services were available in 6.5 percent villages in the village itself and the average distance at which these facilities were available was 6.2 kms. The artificial insemination facility was available in 6 percent villages in village itself and average distance at which this facility was available was 8.1 kms. The cattle feed was available in village itself in the case of only 2.8 percent villages and average distance at which cattle feed was available was 10.9 Kms.

2.5 AVERAGE NO. OF LIVESTOCK AND POULTRY REARED PER 100 HOUSEHOLDS:

The details about the number of bovine, poultry, goats and sheep reared per 100 households is presented in Table No. 8(A).

TABLE NO. 8(A)

AVERAGE NUMBER OF LIVESTOCK / POULTRY PER 100 HOUSEHOLDS

Sr.No.	Category	In-milk	Dry & not calved once	Adult even males	Young stock	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Cattle	27	42	95	56	220
2.	Buffalo	22	15	2	20	59
3.	Poultry	-	-	-	-	246
4.	Goats	-	-	-	-	105
5.	Sheep	-	-	-	-	23

It is seen from the above table that average number of cattle reared per 100 households was 220, the buffalo class bovine , 59, goats 105 and sheep 23.

The livestock for households keeping particular class of animals is presented in Table No. 8(B).

TABLE NO. 8 (B)

AVERAGE NUMBER OF LIVESTOCK PER 100 HOUSEHOLDS KEEPING PARTICULAR KIND OF LIVESTOCK

Sr.No.	Category	In-milk	Dry + N.C.	Adult females	Adult males	Young stock	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	<u>Bovine</u>						
	a) Cattle	44	68	112	154	90	356
	b) Buffalo	35	24	59	4	32	95
2.	Goat	115	128	243	14	146	403
3.	Sheep	-	-	2276	139	727	3142

CHAPTER NO. III

3.1 MILK PRODUCTION AND BOVINE KEEPING PRACTICES :

The estimates of milk production for 12 groups of districts including Gr. Bombay, during each season was obtained for indigenous cows and buffaloes separately. It was based on (1) estimates of average daily milk yield per animal in-milk (2) estimated number of animals in-milk and (3) Number of days in the season. The results are based on 9639 cows and 4201 buffaloes for milk recording during the year.

Attempts were also made from 1935-36 to obtain the separate estimates of milk production in respect of crossbred cows also. However, it was not possible at this stage to obtain these estimates for each group of districts as was possible in respect of indigenous cows. This is due to the fact that the number of crossbred cows observed is not sizable. Hence, only State estimates are worked-out in case of crossbred cows.

3.2 ESTIMATED NUMBER OF IN-MILK AND MILCH ANIMALS

The 'Ratio' method of estimation was adopted to work out the estimated number of in-milk cows as well as buffaloes. The ratio was worked-out between the total number of in-milk animals enumerated and the corresponding number as per the 1902 census in all the selected villages in respective group of districts and in addition to that data received from Panchayat Samiti for remaining 15 percent villages was also used to obtain this ratio. However, for winter season Ratio was worked-out using 1907 census figures.

The estimates so obtained for different group of districts were pooled together to obtain the estimated number for a season. For State as a whole a similar procedure was adopted to obtain the estimated number of milch animals.

The estimated number of in-milk and milch animals so worked-out for different seasons and for groups of districts are presented in Table No. 9,10,11 and 12 respectively.

TABLE NO. 9

Estimated number of in-milk and milch animals for  
summer season

Sr.No.	Group of Districts	Estimated no. of animals (in lakhs)			
		In-milk		Milch	
		Indige- nous COWS	Buffal- oes	Indige- nous COWS	Buffal- oes
(1)	(2)	(3)	(4)	(5)	(6)
1.	Gr. Bombay	0.03	0.88	0.05	0.91
2.	Thane, Raigad	1.42	1.07	2.96	1.67
3.	Ratnagiri, Sindhudurg	0.92	0.42	1.98	0.74
4.	Nashik, Dhule, Jalgaon	2.89	1.92	6.39	3.39
5.	Ahmednagar, Pune	2.04	1.23	4.13	2.04
6.	Satara, Sangli, Kolhapur	1.29	4.52	2.30	6.46
7.	Solapur, Latur, Osmanabad, Beed	2.83	2.04	5.14	3.37
8.	Aurangabad, Jalna, Bulchana	1.92	0.73	4.03	1.39
9.	Parbhani, Nanded	2.24	1.16	4.48	1.82
10.	Akola, Amravati, Yavatmal	2.58	1.06	6.52	2.04
11.	Wardha, Nagpur, Bhandara	2.26	0.77	5.81	1.43
12.	Gadchiroli, Chandrapur	1.41	0.30	3.52	0.63
State Total		21.83	16.10	47.36	25.89
		( 4.72)	( 3.64)		
Crossbred for the State		3.55	-	5.32	-

Note :- Figures in brackets indicate percentage standard error.

TABLE NO. 10

Estimated number of in-milk and milch animals for Rainy Season

Sr.No.	Group of Districts	Estimated number of animals (in lakhs)			
		In-milk		Milch	
		Indige- nous cows	Buffal- oes	Indige- nous cows	Buffal- oes
(1)	(2)	(3)	(4)	(5)	(6)
1.	Gr. Bombay	0.03	0.88	0.05	0.91
2.	Thane, Raigad	1.45	1.09	3.00	1.71
3.	Ratnagiri, Sindhudurg	0.90	0.43	1.95	0.76
4.	Nashik, Dhule, Jalgaon	2.91	1.93	6.38	3.39
5.	Ahmednagar, Pune	2.09	1.25	4.25	2.07
6.	Satara, Sangli, Kolhapur	1.31	4.54	2.33	6.49
7.	Solapur, Latur, Osmanabad, Beed	2.86	2.07	5.16	3.42
8.	Aurangabad, Jalna, Buldhana	2.01	0.76	4.30	1.42
9.	Parbhani, Nanded	2.25	1.17	4.50	1.82
10.	Akola, Amravati, Yavatmal	2.62	1.07	6.59	2.05
11.	Wardha, Nagpur, Bhandara	2.29	0.79	5.87	1.49
12.	Gadchiroli, Chandrapur	1.43	0.32	3.66	0.66
State Total		22.15	16.30	48.04	26.19
		(4.17)	(5.56)		
Crossbred cows for the State		3.81		5.53	

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 11

Estimated number of in-milk and milch animals for  
the Winter Season

Sr.No. Group of Districts		Estimated number of animals (in lakhs)			
		In-milk		Milch	
		Indige- nous cows	Buffal- oes	Indige- nous cows	Buffal- oes
(1)	(2)	(3)	(4)	(5)	(6)
1.	Gr. Bombay	0.03	0.88	0.05	0.91
2.	Thane, Raigad	1.45	1.10	3.00	1.70
3.	Ratnagiri, Sindhudurg	0.91	0.43	1.95	0.76
4.	Nashik, Dhule, Jalgaon	2.91	1.95	6.36	3.40
5.	Ahmednagar, Pune	2.09	1.25	4.27	2.07
6.	Satara, Sangli, Kolhapur	1.31	4.56	2.33	6.52
7.	Solapur, Latur, Osmanabad, Beed	2.86	2.07	5.17	3.43
8.	Aurangabad, Jalna, Buldhana	2.01	0.76	4.32	1.45
9.	Parbhani, Nanded	2.26	1.17	4.51	1.84
10.	Akola, Amravati, Yavatmal	2.63	1.07	6.60	2.05
11.	Wardha, Nagpur, Bhandara	2.29	0.80	5.89	1.50
12.	Gadchiroli, Chandrapur	1.43	0.32	3.67	0.68
State Total		22.18 ( 4.83)	16.36 ( 4.24)	48.14	26.31
Crossbred cows for the State		3.82	-	5.73	

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 12

Estimated number of in-milk and milch animals for the year (Overall)

Sr.No.	Group of Districts	Estimated number of animals(in lakhs)			
		In-milk		Milch	
		Indige- nous cows	Buffal- oes	Indige- nous cows	Buffal- os
(1)	(2)	(3)	(4)	(5)	(6)
1.	Gr. Bombay	0.03	0.88	0.04	0.91
2.	Thané, Raigad	1.44 (5.1)	1.09 (1.9)	2.98 (3.8)	1.69 (2.4)
3.	Ratnagiri, Sindhudurg	0.91 (1.1)	0.43 (2.4)	1.96 (1.9)	0.75 (1.4)
4.	Nashik, Dhule, Jalgaon	2.91 (1.7)	1.93 (1.0)	6.38 (1.9)	3.39 (0.3)
5.	Ahmednagar, Pune	2.07 (2.0)	1.24 (2.5)	4.22 (2.4)	2.06 (2.0)
6.	Satara, Sangli, Kolhapur..	1.30 (2.4)	4.54 (1.1)	2.32 (3.6)	6.49 (1.7)
7.	Solapur, Latur, Osmanabad, Beed	2.85 (2.2)	2.06 (1.0)	5.16 (2.8)	3.41 (1.8)
8.	Aurangabad, Jalna, Buldhana	1.98 (7.3)	0.75 (2.7)	4.23 (6.5)	1.42 (2.9)
9.	Parbhani, Nanded	2.25 (2.7)	1.17 (1.7)	4.50 (2.5)	1.83 (1.7)
10.	Akola, Amravati, Yavatmal	2.61 (2.0)	1.07 (3.9)	6.57 (2.2)	2.05 (3.0)
11.	Wardha, Nagpur, Bhandara..	2.28 (3.2)	0.78 (2.6)	5.86 (3.2)	1.47 (3.5)
12.	Gadchiroli, Chandrapur	1.42 (4.4)	0.31 (3.3)	3.62 (5.2)	0.66 (6.5)
State Total		22.05 (2.9)	16.25 (1.8)	47.84 (3.1)	26.13 (2.0)
Percentage Standard Errors		4.58	2.63	-	-
Crossbred and Exotic		3.73 (6.6)	-	5.53 (5.5)	-

Note :- Figures in brackets indicate percentage increase over census figures of 1987.



The above table indicates that during the year 1990-91 as compared to 1982 census in the case of in-milk Indigenous cows, the percentage increase for State as a whole comes to 3 percent, the same for crossbred cows and buffaloes comes to 7 percent and 2 percent respectively. In the case of milch animals, the percentage increase for the state for indigenous cows, crossbred cows and buffaloes comes to about 2, 2 and 5.5 percent respectively. The percentage increase in crossbred cows is noteworthy and is a result of crossbreeding programme in the State. Due to crossbreeding programme percentage increase in indigenous cows is comparatively low.

### 3.3 AVERAGE DAILY MILK YIELD PER ANIMAL IN-MILK AND PER MILCH ANIMAL :-

The estimated average yield per cow in-milk and per milch animal in respect of cows and buffaloes for Summer, Rainy and Winter Seasons are presented in Tables - 13, 14 and 15 respectively.

TABLE NO. 13

Average daily milk yield per animal in-milk and per milch animal for Summer Season

Group No.	Group of Districts	Per day average milk yield (kg.)			
		Indigenous cows		Buffaloes	
		In-milk	Milch	In-milk	Milch
(1)	(2)	(3)	(4)	(5)	(6)
1.	Gr. Bombay	5.306	4.099	6.143	5.932
2.	Thane, Raigad	0.996	0.480	2.908	1.870
3.	Ratnagiri, Sindhudurg	1.013	0.468	2.198	1.254
4.	Nashik, Dhule, Jalgaon	1.377	0.624	3.036	1.720
5.	Ahmednagar, Pune	1.313	0.647	2.552	1.541
6.	Satara, Sangli, Kolhapur	1.353	0.758	2.436	1.704
7.	Solapur, Latur, Osma mbad, Beed	1.407	0.774	2.576	1.563
8.	Aurangabad, Jalna, Buldhana	1.251	0.589	2.823	1.483
9.	Parbhani, Nanded	1.583	0.789	2.481	1.570
10.	Akola, Amravati, Yavatmal	0.827	0.327	2.197	1.147
11.	Wardha, Nagpur, Bhandara	0.786	0.305	2.613	1.403
12.	Gadchiroli, Chandrapur	0.408	0.163	1.818	0.864
	State as a whole	1.161 (8.60)	0.535	2.763 (9.91)	1.719
	For C.B. and Exotic cows..	6.002	4.006	-	-

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 14

Average daily milk yield per animal in-milk and per milch animal for Rainy Season

Group No.	Group of the Districts	Per day average milk yield (kg.)			
		Indigenous cow		Buffalo	
		In-milk	Milch	In-milk	Milch
(1)	(2)	(3)	(4)	(5)	(6)
1.	Gr. Bombay	.. 5.250	4.055	6.226	6.012
2.	Thane, Raigad	.. 1.191	0.575	2.988	1.858
3.	Ratnagiri, Sindhudurg	.. 1.138	0.527	2.142	1.208
4.	Nashik, Dhule, Jalgaon	.. 1.640	0.747	3.083	1.758
5.	Ahmednagar, Pune	.. 1.472	0.722	2.792	1.680
6.	Satara, Sangli, Kolhapur	.. 1.347	0.756	2.461	1.721
7.	Solapur, Latur, Osmanabad, Beed	.. 1.537	0.853	2.557	1.549
8.	Aurangabad, Jalna, Buldhana	.. 1.457	0.679	2.906	1.554
9.	Parbhani, Nanded	.. 1.596	0.797	2.509	1.610
10.	Akola, Amravati, Yavatmal	.. 0.874	0.348	2.271	1.183
11.	Wardha, Nagpur, Bhandara	.. 0.802	0.312	2.707	1.439
12.	Gadchiroli, Chandrapur	.. 0.418	0.163	1.771	0.848
State as a whole		.. 1.272 (12.05)	0.586	2.806 (6.14)	1.746
For Crossbred and Exotic Cows		.. 6.485	4.475	-	-

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 15

Average daily milk yield per animal in-milk and per  
milk animal for Winter Season

Group No.	Group of the Districts	Per day average milk yield (in kg.)			
		Indigenous cows		Par-falcos	
		In-milk	Milk	In-milk	Milk
(1)	(2)	(3)	(4)	(5)	(6)
1.	Gr. Bombay	.. 5.283	4.081	6.287	6.071
2.	Thane, Raigad	.. 1.199	0.579	2.917	1.898
3.	Ratnagiri, Sindhudurg	.. 1.138	0.528	2.155	1.213
4.	Nashik, Dhule, Jalgaon	.. 1.765	0.806	3.232	1.848
5.	Ahmednagar, Pune	.. 1.568	0.768	3.003	1.814
6.	Satara, Sangli, Kolhapur	.. 1.357	0.761	2.587	1.809
7.	Solapur, Latur, Osmanabad, Beed	.. 1.543	0.865	2.688	1.626
8.	Aurangabad, Jalna, Buldhana	.. 1.466	0.762	3.000	1.573
9.	Parbhani, Nanded	.. 1.597	0.799	2.760	1.765
10.	Akola, Amravati, Yavatmal	0.876	0.349	2.281	1.187
11.	Wardha, Nagpur, Bhandara	.. 0.804	0.312	2.808	1.492
12.	Gadchiroli, Chandrapur	.. 0.426	0.166	1.890	0.888
State as a whole		.. 1.302 (10.66)	0.600	2.926 (9.94)	1.819
Crossbred and Exotic Cows		.. 6.495	4.322	-	-

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 15

Average daily milk yield per animal in-milk and per  
milk animal (Overall)

Group No.	Group of the Districts	Per day average milk yield (in kg.)			
		Indigenous Cow		Buffalo	
(1)	(2)	In-milk	Milk	In-milk	Milk
(1)	(2)	(3)	(4)	(5)	(6)
1. Gr. Bombay		.. 5.280	4.079	6.218	6.004
2. Thane, Raigad		.. 1.129	0.545	2.911	1.875
3. Ratnagiri, Sindhudurg		.. 1.096	0.507	2.165	1.225
4. Nashik, Dhule, Jalgaon		.. 1.594	0.725	3.117	1.775
5. Ahmednagar, Pune		.. 1.452	0.713	2.712	1.678
6. Satara, Sangli, Kolhapur		.. 1.356	0.761	2.494	1.744
7. Solapur, Latur, Osmanabad, Beed		.. 1.496	0.828	2.607	1.579
8. Aurangabad, Jalna, Buldhana		.. 1.393	0.651	2.910	1.537
9. Parbhani, Nanded		.. 1.592	0.795	2.583	1.648
10. Akola, Amravati, Yavatmal		.. 0.859	0.341	2.250	1.172
11. Wardha, Nagpur, Bhandara		.. 0.797	0.310	2.710	1.445
12. Gadchiroli, Chandrapur		.. 0.417	0.164	1.826	0.867
State as a whole		.. 1.245 (2.99)	0.574	2.832 (4.43)	1.761
Crossbred and Exotic Cow		.. 6.334	4.271	-	-

It is seen from the table no. 16, that the overall average milk yield per day/Indigenous cow in-milk was 1.245 kg. and that for exotic/crossbred cow in-milk was 6.334 kg. In case of buffalo the same was 2.832 kg.

The average milk yield per animal in-milk and per milch animal for Gr. Bombay indicates abnormally less difference mainly because rearing of dry animals is costly in Bombay.

3.4 MILK PRODUCTION :-

The estimates of milk production for each group of districts for the three seasons and also for the entire year have been worked-out for cows and buffaloes separately and shown in Table Nos. 17,18,19 and 20.

TABLE NO. 17

Estimated milk production for Summer Season

Group No.	Group of the Districts	Milk production (in '000' M.T.)	
		Indigenous cow milk	Buffalo milk
(1)	(2)	(3)	(4)
1.	Gr. Bombay	2.254	65.617
2.	Thane, Raigad	17.294	38.016
3.	Ratnagiri, Sindhudurg	11.317	11.318
4.	Nashik, Dhule, Jalgaon	48.604	71.069
5.	Ahmednagar, Pune	32.598	38.442
6.	Satara, Sangli, Kolhapur	21.317	134.241
7.	Solapur, Latur, Osmandbad, Beed	48.601	64.197
8.	Aurangabad, Jalna, Buldhana	29.311	25.135
9.	Parbhani, Nanded	43.180	34.959
10.	Akola, Amravati, Yavatmal	26.030	28.503
11.	Wardha, Nagpur, Bhandara	21.653	24.560
12.	Gadchiroli, Chandrapur	7.012	6.636
State Total		309.171 (4.43)	542.693 (4.30)
For C.B. and Exotic Cow		260.093	-

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 18

Estimated Milk Production for Rainy Season

Group No.	Group of Districts	Milk Production (in '000' M.T.)	
		Indigenous Cows	Buffaloes
(1)	(2)	(3)	(4)
1.	Gr. Bombay	.. 2.249	67.049
2.	Thane, Raigad	.. 21.205	39.113
3.	Ratnagiri, Sindhudurg	.. 12.630	11.285
4.	Nashik, Dhule, Jalgaon	.. 58.672	73.334
5.	Ahmednagar, Pune	.. 37.795	43.776
6.	Satara, Sangli, Kolhapur	.. 21.673	137.451
7.	Solapur, Latur, Osmanabad, Beed	.. 54.129	65.219
8.	Aurangabad, Jalna, Buldhana	.. 35.941	27.166
9.	Parbhani, Nanded	.. 44.180	37.055
10.	Akola, Amravati, Yavatmal	.. 28.203	29.768
11.	Wardha, Nagpur, Bhandara	.. 22.552	26.268
12.	Gadchiroli, Chandrapur	.. 7.337	6.932
State Total		.. 346.571 (2.77)	562.447 (4.60)
Crossbred Cows		.. 304.276	-

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 12

Estimated Milk Production for Winter Season

Group No.	Group of the Districts	Milk Production (in '000 M.T.) Percentage cows	M.T. Percentage
(1)	(2)	(3)	(4)
1.	Gr. Bombay	.. 2.208	56.054
2.	Thane, Raigad	.. 20.846	38.629
3.	Ratnagiri, Sindhudurg	.. 12.342	11.129
4.	Nashik, Dhule, Jalgaon	.. 61.659	75.486
5.	Ahmednagar, Pune	.. 39.362	44.983
6.	Satara, Sangli, Kolhapur	.. 21.467	141.564
7.	Solapur, Latur, Osmanabad, Beed	.. 53.045	66.947
8.	Aurangabad, Jalna, Buldhana	.. 35.317	27.397
9.	Parbhani, Nanded	.. 43.256	38.888
10.	Akola, Amravati, Yavatmal	.. 27.621	29.218
11.	Wardha, Nagpur, Bhandara	.. 22.091	26.854
12.	Gadchiroli, Chandrapur	.. 7.312	7.263
State Total		.. 346.526(4.87)	574.412(4.98)
Crossbred and Exotic Cows		.. 297.379	-

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 20

Estimated Milk Production for the year (Overall)

Group No.	Group of the Districts	Milk Production (in '000' M.T.)		
		Indigenous Cows	Buffaloes	Total
(1)	(2)	(3)	(4)	(5)
1.	Gr. Bombay	6.712	198.720	205.432
2.	Thane, Raigad	59.344	115.758	175.102
3.	Retnagiri, Sindhudurg	36.290	33.733	70.023
4.	Nashik, Dhule, Jalgaon	168.934	219.889	388.823
5.	Ahmednagar, Pune	109.755	126.201	235.956
6.	Satara, Sangli, Kolhapur	64.457	413.256	477.713
7.	Solapur, Latur, Osmanabad, Beed	155.775	196.362	352.137
8.	Aurangabad, Jalna, Buldhana	100.569	79.798	180.367
9.	Parbhani, Nanded	130.616	109.912	240.528
10.	Akola, Amravati, Yavatmal	81.859	87.510	169.369
11.	Wardha, Nagpur, Bhandara	66.296	77.682	143.978
12.	Gadchiroli, Chandrapur	21.661	20.832	42.493
State Total		1002.268 (2.13)	1679.553 (2.74)	2681.821
Crossbred and exotic cows		861.748	-	861.748
Overall for Deshi + Crossbred cows		1864.016	-	-
Overall for Cows + Buffaloes		1864.016	1679.553	3543.669

Note :- The figures in the brackets indicate Percentage Standard Errors.

It is seen from the Table No. 20 that the total milk production from bovines for the State, during the year, was estimated as 3543669 tonnes. Of this, the contribution from cows was about 53 percent and remaining 47 percent was from buffalo class. Per capita availability of bovine milk during the year was found to be 131 Gms., based on the projected human population for the year under reference.



3.4.1 To study the seasonal variation of average milk yield and total milk production, the district groupwise average milk yield and total milk production during Summer, Rainy and Winter seasons is given in the table no. 21 for indigenous cows. As the district group averages are not worked-out for crossbred cows the State figures are given.

TABLE NO. 21

Table showing average per day per animal milk yield for indigenous cows in-milk and total milk production during Summer, Rainy and Winter seasons of the year 1990-91  
(Milk yield in kg. Milk Production in '000' M.T.)

Group No.	Group of the Districts	Summer		Rainy		Winter	
		Average milk production	Total milk production	Average milk production	Total milk production	Average milk production	Total milk production
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Gr. Bombay	..5.306	2.254	5.250	2.249	5.283	2.208
2.	Thane, Raigad	..0.996	17.294	1.191	21.205	1.199	20.846
3.	Ratnagiri, Sindhudurg	..1.013	11.317	1.138	12.630	1.138	12.342
4.	Nashik, Dhule Jalgaon	..1.377	48.604	1.640	58.672	1.765	61.659
5.	Ahmednagar, Pune	..1.313	32.598	1.472	37.795	1.568	39.362
6.	Satara, Sangli, Kolhapur	..1.353	21.317	1.347	21.673	1.357	21.467
7.	Solapur, Latur, Osmanabad, Beed	..1.407	48.601	1.537	54.129	1.543	53.045
8.	Aurangabad, Jalna, Buldhana	..1.251	29.311	1.457	35.941	1.466	35.317
9.	Parbhani, Nanded	1.583	43.180	1.596	44.180	1.597	43.256
10.	Akola, Amravati, Yavatmal	..0.827	26.030	0.874	28.208	0.876	27.621
11.	Wardha, Nagpur, Bhandara	..0.786	21.653	0.802	22.552	0.804	22.091
12.	Gadchiroli, Chandrapur	..0.403	7.012	0.413	7.337	0.426	7.312
State Total		..1.161	309.171	1.272	346.571	1.302	346.526
Exotic and Cross bred cows		..6.102	260.093	6.485	304.276	6.495	297.379

The table indicates that in the case of cows the seasonal variation is not noteworthy though in the case of State as a whole the average milk yield and total milk production is minimum in summer season and maximum in rainy season. In the district groups Thane/Raigad and Ratnagiri/Sindhudurg the average and total milk production during summer season is considerably low as in these districts the fodder and water scarcity exists in majority of villages during summer season. In the case of crossbred cow there is seasonal variation, the average milk yield and total milk production being minimum during summer season.

3.4.2 The data to study the seasonal variation in milk yield and milk production in respect of buffaloes is given in the table no. 22.

TABLE NO. 22

Table showing average per day, per animal milk yield for buffaloes in-milk and total milk production during Summer, Rainy and Winter Seasons of the year 1990-91  
(Average milk yield in kg. milk production in '000'M.T.)

Group No.	Group of the Districts	Summer		Rainy		Winter	
		Daily average milk yield/buffalo in-milk	Total milk production	Daily average milk yield/buffalo in-milk	Total milk production	Daily average milk yield/buffalo in-milk	Total milk production
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Gr. Bombay	6.143	65.617	6.226	67.049	6.287	66.054
2.	Thane, Raigad	2.903	38.016	2.903	39.113	2.917	38.629
3.	Ratnagiri, Sindhudurg	2.198	11.318	2.142	11.286	2.155	11.129
4.	Nashik, Dhule, Jalgaon	3.036	71.069	3.083	73.334	3.232	75.486
5.	Ahmednagar, Pune	2.552	38.442	2.792	42.776	3.003	44.983
6.	Satara, Sangli, Kolhapur	2.436	134.241	2.461	137.451	2.587	141.564
7.	Solapur, Latur, Osmanabad, Beed	2.576	64.197	2.557	65.219	2.688	66.947
8.	Aurangabad, Jalna, Buldhana	2.823	25.135	2.906	27.166	3.000	27.397
9.	Parbhani, Nanded,	2.481	34.959	2.509	36.065	2.760	38.888
10.	Akola, Amravati, Yavatmal	2.197	28.503	2.271	29.788	2.281	29.218
11.	Wardha, Nagpur, Bhandara	2.613	24.560	2.707	26.268	2.808	26.854
12.	Gadchiroli, Chandrapur	1.818	6.636	1.771	6.932	1.890	7.263
State Total/ Overall		2.763	542.693	2.806	562.447	2.926	574.412

The above table indicates that in the case of buffalo class the minimum daily average milk yield and total milk production is observed in Summer Season and the same is increased by 1.6, 3.6 and 5.9 and 5.3 percent during the rainy and winter seasons respectively. The Gr. Bombay results, also indicate the minimum average milk yield and production in summer season.

3.4.3 The data about the average per day milk yield and total milk production for the years 1988-89, 1989-90 and 1990-91 for cattle and buffalo class is given in Table No. 23. The average milk yield per day and total milk production for crossbred cows is being worked-out since 1985-86.

It is observed from the table that the total milk production during 1988-89, 1989-90 and 1990-91 for cattle class was 1262, 1599 and 1864 thousand M.T. respectively. The increase in milk production was mainly due to good rainy season in the State during 1990-91. The buffalo milk production is also increased by 12.7 percent as compared to 1989-90.

TABLE NO. 23

Statement showing comparative data about average milk yield per day, per animal and total milk production for the years 1988-89, 1989-90 and 1990-91

Group No.	Group of Districts	1988-89				1989-90	
		Other than C.B. Cows		Buffaloes		Other than C.B. Cows	
(1)	(2)	Average milk yield per day per animal in-milk (kg.)	Total milk production ('000' M.T.)	Average milk yield per day per animal in-milk (kg.)	Total milk production ('000' M.T.)	Average milk yield per day per animal in-milk (kg.)	Total milk production ('000' M.T.)
1.	Gr. Bombay	4.945	3.610	6.477	103.748	5.127	4.480
2.	Thane, Raigad	0.889	41.231	2.715	86.193	0.994	48.685
3.	Ratnagiri, Sindhudurg	0.879	25.994	1.689	22.167	1.155	35.825
4.	Nashik, Dhule, Jalgaon	1.272	127.235	3.068	184.770	1.503	155.909
5.	Ahmednagar, Pune	1.354	99.834	2.607	112.268	1.412	104.737
6.	Satara, Sangli, Kolhapur	1.195	54.972	2.449	346.825	1.186	55.954
7.	Solapur, Latur, Osmanabad, Beed	1.500	147.852	3.082	191.261	1.587	159.803
8.	Aurangabad, Jalna, Buldhana	1.163	81.958	2.995	74.287	1.350	95.543
9.	Parbhani, Nanded	1.260	90.113	2.036	65.400	1.290	97.877
10.	Akola, Amravati, Yavatmal	0.861	80.424	2.523	93.946	0.856	80.764
11.	Wardha, Nagpur, Chandrapur	0.717	52.574	2.931	69.536	0.712	54.363
12.	Gadchiroli, Chandrapur	0.393	20.635	1.693	16.112	0.401	20.960
State Total		1.094	826.432	2.765	1371.518	1.179	914.910
Exotic and Cross bred cows		6.003	435.993	-	-	6.221	683.663

Table No. 23(contd.)

Group No.	Group of Districts	1989-90		1990-91			
		Buffalo		Other than C.B. cows		Buffalo	
(1)	(2)	Average milk yield per day, per animal in-milk (kg.)	Total milk production ('000' M.T.)	Average milk yield per day, per animal in-milk (kg.)	Total milk production ('000' M.T.)	Average milk yield per day, per animal in-milk (kg.)	Total milk production ('000' M.T.)
(9)	(10)	(11)	(12)	(13)	(14)		
1.	Gr. Bombay	6.042	132.558	5.280	6.712	6.218	198.720
2.	Thane, Raigad.	2.515	82.680	1.129	59.344	2.911	115.758
3.	Ratnagiri, Sindhudurg	2.003	28.784	1.096	36.290	2.165	35.733
4.	Nashik, Dhule, Jalgaon	3.149	193.558	1.594	168.934	3.117	219.889
5.	Ahmednagar, Pune	2.662	113.449	1.452	109.755	2.782	126.201
6.	Satara, Sangli, Kolhapur	2.404	361.385	1.356	64.457	2.494	413.256
7.	Solapur, Latur, Osmanabad, Beed	3.140	216.072	1.496	155.775	2.607	196.362
8.	Aurangabad, Jalna, Buldhana	2.998	77.706	1.393	100.569	2.910	79.698
9.	Parbhani, Nanded	2.483	89.092	1.592	130.616	2.583	109.912
10.	Akola, Amravati, Yavatmal	2.490	93.624	0.859	81.859	2.250	87.510
11.	Wardha, Nagpur, Bhandara	3.051	76.673	0.797	66.296	2.710	77.682
12.	Gadchiroli, Chandrapur	1.975	20.352	0.417	21.661	1.826	20.832
State Total		2.816	1490.933	1.245	1002.268	2.832	1679.553
Exotic and Cross-bred cows		-	-	6.334	861.748	-	-

3.5 AVAILABILITY OF MILK IN BOVINE KEEPER HOUSEHOLDS :-

The information regarding availability of milk was collected for the previous day of visit from 10922 bovine keeper households. The details about production and purchase of milk are given in table no. 24 for cow milk and buffalo milk separately.

TABLE NO. 24

Availability of milk in bovine keeper households

Category	Producing milk		Purchasing milk		Total milk produced + purchased	
	% of household	Average quantity of milk per household(kg.)	% of household	Average quantity of milk per household(kg.)	% of household	Average quantity of milk per household(kg.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
a) Only cow milk	65.2	2.214	51.4	0.305	62.2	1.821
b) Only buff. milk	28.1	3.680	48.6	0.286	32.8	2.382
c) Both cow milk and buff. milk	6.7	2.272	-	-	5.0	2.272
Total cow milk and buff. milk	100.0		100.0	0.305 0.286	100.0	
Overall availability of:						
Cow milk	-	1.005	-	0.033	-	1.043
Buff. milk	-	0.940	-	0.025	-	0.965
Total	-	1.945	-	0.063	-	2.008

It was observed that on an average a bovine keeper household produced 1005 Grams of cow milk and 940 Grams of buffalo milk, whereas the quantity purchased was 33 Grams of cow milk and 25 Grams of buffalo milk. The producer households are classified as 65 percent households producing cow milk, about 28 percent producing buffalo milk while 7 percent households producing cow milk as well as buffalo milk.

3.6 UTILISATION OF MILK :-

The information about utilisation of milk on the previous day of the visit in the bovine keeper (milk producer) households is presented in table no. 25.

TABLE NO. 25

Utilisation of milk in bovine keeper households

Category	Percentage of milk				
	Consumed as fluid milk	Sold as fluid milk	Converted to milk products	Spoiled	Balance
(1)	(2)	(3)	(4)	(5)	(6)
Only cow milk	42.6	54.4	2.4	0.1	0.5
Only buff.milk	26.9	69.1	3.4	N	0.6
Both ) Cow milk	44.1	53.2	2.0	0.1	0.6
) Buff.milk	24.7	72.0	2.8	N	0.5
Overall) Cow milk	42.8	54.2	2.4	0.1	0.5
) Buff.milk	26.7	69.3	3.3	-	0.6

(Note :- N = Negligible )

The households producing only cow milk, consumed about 43 percent milk and sold 54 percent milk, whereas those producing only buffalo milk consumed about 27 percent and sold 69 percent of the milk. On an average 43 percent of cow milk was utilised at home and 54 percent was sold out. The same was 27 percent and 63 percent in respect of buffalo milk.

3.7 DISTRIBUTION OF IN-MILK ANIMALS ACCORDING TO DAILY MILK YIELD IN DIFFERENT RANGES :-

The animals observed for milk production were classified according to different ranges and are presented in Table no. 26.



TABLE NO. 26

Percentage distribution of in-milk animals according to daily milk yield

Sr. No.	Category	Season	Daily milk yield (Grams)							Total
			0 to 500	501 to 1000	1001 to 2000	2001 to 3000	3001 to 5000	Above 5000	10000	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1)	Cow	Summer	3.2	20.8	29.3	30.6	7.0	2.6	6.5	100.0
		Rainy	3.1	20.1	24.9	32.1	8.3	4.7	6.8	100.0
		Winter	3.4	9.4	29.5	38.2	8.4	5.0	6.1	100.0
	Overall		3.3	16.3	28.5	33.6	8.0	3.8	6.5	100.0
2)	Buffalo	Summer	N	1.1	9.8	29.1	35.1	22.1	2.8	100.0
		Rainy	N	1.2	7.5	25.7	34.9	28.6	2.1	100.0
		Winter	0.1	1.1	8.1	27.3	32.8	28.0	2.6	100.0
	Overall		N	1.1	8.3	27.5	34.0	26.6	2.5	100.0

It is observed that about 53 percent cows have yield upto 1000 Grams, while 91 percent buffaloes were producing milk above 1000 Grams.

**3.8 FEEDING PRACTICES :-**

Data of feed and fodder fed to the animals were collected from the selected households having bovines. The data were collected for the following types of animals (bovines) (i) in-milk, (ii) Dry and not calved even once, (iii) adult males, (iv) Youngstock upto 3 years. The type of feed and fodder fed were green fodder, dry fodder and concentrates.

During the year under report, data were collected from 10922 households having 35031 cattle, 9963 buffaloes. While collecting the data on feeding, information on whether the animals were only grazed, only stallfed or both, was also collected. The season-wise details about the number of animals observed for feeding practices are given in table no. 27.

TABLE NO. 27

Number of animals observed for feeding practices

Category of animals	Cattle				Buffaloes			
	Summer	Rainy	Winter	Total	Summer	Rainy	Winter	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
In-milk	2455	3576	2270	8301	1259	1693	1558	4510
Dry + Not calved even once	2031	2309	1420	5760	840	937	491	2268
Adult males	4317	5368	3508	13193	201	238	168	607
Youngstock upto 3. years	2663	2827	2287	7777	853	959	766	2578
Total	11466	14080	9485	35031	3153	3827	2983	9963

3.9 DISTRIBUTION OF ANIMALS ACCORDING TO FEEDING PRACTICES :-

The details about the feeding practices of the bovine are given in table no. 28.

It was observed that about 14 percent cattle were only grazed while 12 percent animals were stalled only. In respect of buffaloes about 12 percent animals were grazed only and 10 percent were stalled only. The percentages of only stalled animals was more in youngstock category of both cattle and buffalo class.

TABLE NO. 28

Percentage distribution of animals according to general feeding practices followed, as only Grazed(G), only stalled (S) or both (G + S)

Category of animals	Summer			Rainy		
	G	S	G + S	G	S	G + S
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>CATTLE</u>						
1. In-milk	3.10	9.33	87.57	6.63	12.67	80.65
2. Dry + N.C.	34.02	3.94	62.04	32.27	2.42	65.31
3. Adult males	10.02	15.03	78.90	9.07	3.86	37.07
4. Youngstock upto 3 years	24.93	29.62	45.45	25.47	29.32	44.71
Overall	14.75	15.25	70.02	15.56	11.07	73.51
<u>BUFFALOES</u>						
1. In-milk	3.18	3.65	93.17	4.78	1.36	93.86
2. Dry + N.C.	20.24	8.69	71.07	23.91	3.63	72.46
3. Adult males	6.96	14.93	78.11	13.03	5.88	81.00
4. Youngstock upto 3 years	18.17	34.47	47.36	22.42	23.15	54.43
Overall	12.02	14.05	73.93	14.40	7.66	77.94
Category of animals	Winter			Overall		
	G	S	G + S	G	S	G + S
(1)	(8)	(9)	(10)	(11)	(12)	(13)
<u>CATTLE</u>						
1. In-milk	4.80	9.60	85.60	5.11	10.84	84.05
2. Dry + N.C.	31.55	7.32	61.13	32.71	4.17	63.12
3. Adult males	3.34	15.45	81.21	6.55	10.65	82.80
4. Youngstock upto 3 years	15.39	29.91	54.70	24.84	21.85	53.31
Overall	10.82	16.32	72.86	14.33	11.89	73.73

TABLE NO. 28 contd.

(1)	(2)	(9)	(10)	(11)	(12)	(13)
<b>BUFFALOES</b>						
1. In-milk	7.77	0.19	92.04	5.36	1.60	93.04
2. Dry + N.C.	13.24	3.05	83.71	20.24	5.38	74.38
3. Adult males	7.14	2.98	89.88	9.39	8.07	82.54
4. Youngstock upto 3 years	13.05	31.72	55.22	18.23	29.44	52.33
Overall	9.99	8.92	81.09	12.32	10.06	77.62

G = Only Grazed. S = Only Stallfed. G + S = Grazed and Stallfed.

### 3.11 AVERAGE QUANTITY OF FEED FODDER FED PER DAY :-

The data was collected about the feed/fodder supplied to various categories of bovine in the selected bovine keeper households. The seasonwise details of average quantity of feed/fodder fed per animal per day are presented in table no. 29. These averages are based on all the animals observed, including those kept on grazing alone, also.

TABLE NO. 29

Seasonwise average quantity of feed/fodder fed per bovine per day

Sea- son	Type of feed	Average feed fed per day per animal (kg.)								
		Cattle				Buffaloes				
		In- milk	Dry + N.C.	Adult males	Young stock	In- milk	Dry + N.C.	Adult males	Young stock	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
<b>SUMMER</b>										
	Green	2.150	0.415	1.051	0.545	3.435	0.666	1.682	0.732	
	Dry	6.068	3.150	9.425	2.317	7.127	5.599	6.537	2.643	
	Concentrates	0.466	0.024	0.133	0.012	0.893	0.027	0.049	0.023	
<b>RAINY</b>										
	Green	6.466	2.969	6.011	2.136	8.806	4.441	2.979	2.319	
	Dry	1.533	1.629	2.481	0.519	2.340	1.272	1.370	0.414	
	Concentrates	0.348	0.012	0.024	0.008	0.748	0.022	0.063	0.006	
<b>WINTER</b>										
	Green	3.577	1.636	3.108	1.190	4.712	3.283	0.333	1.864	
	Dry	5.103	3.532	5.923	1.804	3.520	3.574	4.119	1.689	
	Concentrates	0.400	0.227	0.095	0.022	1.052	0.195	0.006	0.029	
<b>OVERALL</b>										
	Green	4.403	1.946	3.629	1.313	5.428	3.164	1.797	1.659	
	Dry	3.866	2.743	5.681	1.493	4.419	3.373	4.006	1.536	
	Concentrates	0.407	0.021	0.061	0.010	0.893	0.061	0.023	0.012	

It is seen from the table that in the case of cattle class maximum quantity of green fodder and concentrates is fed to in-milk cows. In buffalo class the highest quantity of feed and fodder is fed to the in-milk buffaloes as compared to any other category.

### 3.12 DISTRIBUTION OF BOVINE FED WITH DIFFERENT TYPES OF FEED AND FODDER EITHER ALONE OR IN COMBINATION :-

The different categories of bovines are classified according to type of fodder fed and average quantity fed per day, per animal and this data are presented in table no. 30. Here, those animals which received some feeding at home are only considered and the averages are based on all the three seasons together.

TABLE NO. 30

Distribution of bovine fed with different types of feed and fodder either alone or in combination and average quantity fed per animal per day

Type of fodder fed	Average quantity fed per animal per day (kg.)				
	In-milk	Dry + N.C.	Adult males	Young stock	Overall
(1)	(2)	(3)	(4)	(5)	(6)
<b>A) CATTLE</b>					
i) Green	7.842 (59.2)	6.446 (44.9)	7.948 (48.8)	3.220 (52.5)	6.708 (51.8)
ii) Dry	6.738 (60.5)	6.400 (63.8)	9.125 (66.6)	3.353 (57.5)	7.109 (62.8)
iii) Concentrates	1.860 (23.1)	1.212 (2.6)	1.396 (4.7)	1.046 (0.7)	1.526 (8.4)
<b>B) BUFFALOES</b>					
i) Green	9.998 (57.4)	9.315 (54.2)	5.624 (35.3)	3.330 (60.9)	7.945 (56.2)
ii) Dry	8.466 (55.2)	6.765 (62.5)	6.468 (63.4)	3.604 (52.1)	6.849 (56.8)
iii) Concentrates	1.791 (52.7)	1.502 (3.8)	1.063 (2.9)	1.428 (1.0)	1.788 (27.0)

Note :- Figures in brackets indicate percentage of animals receiving some kind of feeding at home.

TABLE NO. 31

Distribution of bovine fed with different types of feed/fodder

Category	Classifi- cation	Percentage distribution of animals fed with						
		Only Green	Only Dry	Only Conc.	Green + Dry	Green +Conc.	Dry + Conc.	Green +Dry +Conc.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>CATTLE</u>	In-milk	33.2	32.5	N	11.3	6.7	8.6	7.7
	Dry+ N.C.	32.9	52.7	-	11.8	1.0	0.9	0.7
	Adult males	31.2	48.5	-	15.6	1.0	1.9	1.8
	Youngstock	40.9	46.3	-	12.0	0.3	0.1	0.4
	Overall	33.9	44.3	-	13.2	2.4	3.2	3.0
<u>BUFFAL- GOES</u>	In-milk	21.1	16.2	-	7.7	21.4	24.0	9.6
	Dry+ N.C.	36.8	45.4	-	14.1	1.0	0.4	2.3
	Adult males	31.0	63.2	-	2.9	0.9	1.6	0.4
	Youngstock	44.2	41.0	-	13.7	1.0	-	0.1
	Overall	30.6	31.4	-	10.2	10.8	11.8	5.2

3.13 PRODUCTION AND UTILISATION OF DUNG

The data about production and utilisation of dung on the previous day of the visit was collected and seasonwise results are presented in table no. 32. Here, the dung collected in the stalls is only considered.

TABLE NO. 32

Utilisation of dung collected from bovines at stalls

Sr. No.	Season	Average quantity of dung collected per day/bovine (kg.)	Estimated annual quantity of dung collected (1000 M.T.)	Utilisation of dung (%)			Total
				For manure	For other purposes	Other	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1)	Summer	2.950	-	61.19	26.27	12.54	100.0
2)	Rainy	3.054	-	80.12	8.86	11.02	100.0
3)	Winter	3.125	-	60.05	23.20	11.65	100.0
Overall/ Total		3.046	23515	67.33	20.93	11.59	100.0

The average quantity of dung collected in stalls was about 3 kg. per animal per day. The average quantity collected was maximum in winter season. It is observed that the dung produced is mainly used as manure, in rural areas. The quantity of dung collected in the year for the state was estimated as 23515 thousand M.T.

3.14 MORTALITY IN BOVINE :

The mortality observed during the year in various categories of cattle and buffaloes is presented in table no. 33.

TABLE NO. 33

Percentage of mortality in Bovine

Sr.No.	Category	Annual mortality rate in	
		Cattle	Buffaloes
(1)	(2)	(3)	(4)
1.	In-milk	1.1	1.2
2.	Dry and not calved even once	2.3	2.4
3.	Adult males	1.1	2.5
4.	Youngstock	1.8	6.8
	Overall	1.5	3.8

It is seen from the table no. 33 that annual mortality observed in cattle class was about 1.5 percent as against 3.8 percent in buffaloes. The maximum mortality percentage was observed in youngstock category in buffaloes, followed by adult males category in buffalo class.



CHAPTER NO. IV

EGG PRODUCTION AND POULTRY REARING PRACTICES

4.1 SAMPLE SIZE OBSERVED

For collection of data about egg production and poultry rearing practices a cluster of 5 households was observed daily from the villages having poultry out of the total of 590 selected villages. The details are as given below :-

TABLE NO. 34

Number of villages and poultry birds observed

Sr. No.	Season	No. of villages observed	No. of households observed	No. of poultry birds observed					Total
				Cocks	Hens	Cock-erels	Pull-ets	Chicks	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1.	Summer	195	6851	3435	17900	4322	5654	18531	49842
2.	Rainy	195	6948	3561	21669	4376	5745	18896	54247
3.	Winter	200	7065	3604	22629	4491	5872	19025	55621
Total		590	20864	10600	62193	13189	17271	56452	159710

During the year data about egg production were collected for 62193 layers and data on rearing practices followed were collected for 1,59,710 poultry birds from 20,864 poultry keeper households.

4.2 AVERAGE NUMBER OF POULTRY BIRDS PER 100 POULTRY KEEPER HOUSEHOLDS

The average number of poultry birds reared per 100 poultry keeper households, on the day of visit is presented in table no. 35.

TABLE NO. 35

Average number of poultry birds reared per 100 poultry keeper households

Sr. No.	Season	No. of birds per 100 poultry keeper households					Total
		Cocks	Hens	Cockerels	Pullets	Chicks	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Summer	50 (7)	261 (36)	62 (9)	83 (11)	270 (37)	727 (100)
2.	Rainy	51 (6)	311 (40)	63 (8)	83 (11)	272 (35)	780 (100)
3.	Winter	51 (6)	320 (41)	64 (8)	83 (11)	269 (34)	787 (100)
	Overall	51 (7)	298 (39)	63 (8)	83 (11)	271 (35)	766 (100)

Note :- Figures in brackets indicate percentage to total poultry

The average number of poultry birds reared per 100 poultry keeper households was maximum (787) during Winter Season, while it was minimum in Summer Season (i.e. 727). On an average, there were 766 birds per 100 poultry keeper households consisting of 51 cocks, 298 hens, 63 cockerels, 83 pullets and 271 chicks. The overall composition of poultry stock reared per 100 poultry keeper households was observed to be 7 percent cocks, 39 percent hens, 8 percent cockerels, 11 percent pullets and 35 percent chicks.

4.3 ESTIMATED NUMBER OF LAYERS, LAYING PERCENTAGE AND EGGS PRODUCTION :-

The total egg production from deshi birds, for each group of districts, for the three seasons of the year was estimated on the basis of the data collected in the survey. The egg production from improved layers was estimated from the data collected from commercial poultry farms. This improved egg production was estimated for the State as a whole and on yearly basis. The details are given in the table numbers 36, 37, 38 and 39.

TABLE NO. 36

Estimated egg production from deshi layers during  
Summer Season

Sr. No.	Group of Districts	Estimated no. of layers (lakhs)	Laying percentage	Total egg production (lakhs)
(1)	(2)	(3)	(4)	(5)
1.	Gr. Bombay	.. 0.53	30.52	19.85
2.	Thane, Raigad	.. 8.18	31.35	312.75
3.	Ratnagiri, Sindhudurg	.. 8.04	25.61	251.29
4.	Nashik, Dhule, Jalgaon	.. 7.77	31.80	301.32
5.	Ahmednagar, Pune	.. 16.43	32.54	654.44
6.	Satara, Sangli, Kolhapur	.. 17.28	32.67	688.62
7.	Solapur, Latur, Osma rabad, Beed	.. 10.63	28.45	368.98
8.	Aurangabad, Jalna, Dhulchana	.. 3.34	26.43	107.88
9.	Parbhani, Nanded	.. 2.19	30.62	81.80
10.	Akola, Amravati, Yavatmal	.. 4.72	27.62	158.94
11.	Wardha, Nagpur, Bhandara	.. 3.97	31.30	151.64
12.	Gadchiroli, Chandrapur	.. 3.37	29.96	123.11
State as a whole		.. 86.30 ( 6.31)	30.52 ( 3.37)	3220.62 ( 6.70)

Note :- Figures in brackets indicate percentage standard errors.

TABLE NO. 37

Estimated egg production from Deshi layers during  
the rainy season

Group No.	Group of Districts	Estimated No. of layers (in lakhs)	Laying percentage	Total egg production (lakhs)
(1)	(2)	(3)	(4)	(5)
1.	Gr. Bombay	0.53	32.17	21.10
2.	Thane, Raigad	1.34	31.10	318.99
3.	Ratnagiri, Sindhudurg	7.77	28.30	270.43
4.	Nashik, Dhule, Jalgaon	7.62	33.20	310.93
5.	Ahmednagar, Pune	16.17	34.29	682.19
6.	Satara, Sangli, Kolhapur	17.17	33.15	770.06
7.	Solapur, Latur, Osmanabad, Beed	10.04	31.62	390.32
8.	Aurangabad, Jalna, Buldhana	3.29	28.67	116.03
9.	Parbhani, Nanded	2.07	33.81	86.08
10.	Akola, Amravati, Yavatmal	4.55	30.68	171.74
11.	Wardha, Nagpur, Bhandara	3.97	32.53	158.79
12.	Gadchiroli, Chandrapur	3.48	31.99	137.11
	State as a whole	85.00 ( 5.89 )	32.17 ( 17.95 )	3363.84 ( 6.25 )

Note :- Figures in brackets indicate Percentage Standard Errors.

TABLE NO. 38

Estimated egg production from Deshi layers during Winter season.

Group No.	Group of Districts	Estimated No. of layers (lakhs)	Laying percentage	Total egg production (lakhs)
(1)	(2)	(3)	(4)	(5)
1.	Gr. Bombay	0.53	31.57	20.08
2.	Thane, Raigad	8.34	31.27	312.92
3.	Ratnagiri, Sindhudurg	7.80	27.54	257.76
4.	Nashik, Dhule, Jalgaon	7.74	31.51	292.69
5.	Ahmednagar, Pune	17.03	32.32	660.49
6.	Satara, Sangli, Kolhapur	17.07	33.72	690.63
7.	Solapur, Latur, Osmanabad, Beed	10.37	30.43	373.63
8.	Aurangabad, Jalna, Buldhana	3.36	27.99	112.86
9.	Parbhani, Nanded	2.16	32.03	83.01
10.	Akola, Amravati, Yavatmal	4.61	29.43	162.81
11.	Wardha, Nagpur, Bhandara	4.10	32.34	159.09
12.	Gadchiroli, Chandrapur	3.36	30.95	124.79
	State as a whole	86.47 ( 4.16)	31.38 ( 6.88)	3255.81 ( 4.51)

Note :- Figures in brackets indicate percentage standard errors.

TABLE NO. 39

Estimated total egg production during the year  
(Overall)

Group No.	Group of Districts.	Estimated No. of layers (lakhs.)	Laying percentage	Total egg production (lakh)
(1)	(2)	(3)	(4)	(5)
<u>FOR DESHI LAYERS :-</u>				
1.	Gr. Bombay	0.53	31.55	61.03
2.	Thane, Raigad	8.29	31.22	994.66
3.	Ratnagiri, Sindhudurg	7.87	27.14	779.43
4.	Nashik, Dhule, Jalgaon	7.71	32.16	904.99
5.	Ahmednagar, Pune	16.56	33.04	1997.12
6.	Satara, Sangli, Kolhapur	17.17	33.13	2079.31
7.	Solapur, Latur, Osmanabad, Beed	10.35	30.12	1137.93
8.	Aurangabad, Jalna, Buldhana	3.33	27.71	336.79
9.	Parbhani, Nanded	2.14	32.12	250.89
10.	Akola, Amravati, Yavatmal	4.63	29.20	493.49
11.	Wardha, Nagpur, Bhandara	4.01	32.08	469.52
12.	Gadchiroli, Chandrapur	3.40	31.02	385.01
Overall for Deshi layers		85.99	31.35	9340.27
		( 3.19)	( 6.52)	( 3.40)
Improved layers		43.17	70.68	11133.00
Overall for Deshi + Improved		129.16	-	20973.27

Note :- Figures in brackets indicate percentage standard errors.

The total egg production for the State, during the year, was estimated as 20973.27 lakhs. Out of this, the contribution from Deshi layers was 47 percent and from improved layers 53 percent.

The overall eggs obtained per deshi layer per year were 114 and from improved layer were 258. Per capita per annum availability of eggs was 27 during the year under report, on the basis of projected population of the year under report.

4.3.1. The estimated egg production in the State, during the year 1988-89, 1989-90 and 1990-91 are presented in table no. 40.

TABLE NO. 40

Estimated egg production in Maharashtra State during 1988-89, 1989-90 and 1990-91

Group No.	Group of Districts	1988-89			1989-90			1990-91		
		Estimated layers (lakh)	Laying percentage	Egg production (lakh)	Estimated layers (lakh)	Laying percentage	Egg production (lakh)	Estimated layers (lakh)	Laying percentage	Egg production (lakh)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	Gr. Bombay	0.70	31.76	81.14	0.64	32.23	75.28	0.53	31.55	61.03
2.	Thane, Raigad	6.78	34.81	861.55	6.84	35.02	874.32	8.29	31.22	944.66
3.	Ratnagiri, Sindhudurg	8.26	25.52	769.29	7.77	27.93	792.13	7.87	27.14	779.48
4.	Nashik, Dhule, Jalgaon	6.65	33.59	815.26	7.08	32.60	842.45	7.71	32.16	904.99
5.	Ahmednagar, Pune	15.38	33.75	1894.44	15.68	33.82	1935.56	16.56	33.04	1997.12
6.	Satara, Sangli, Kolhapur	16.39	32.16	1924.20	16.22	33.15	1962.35	17.17	33.18	2079.31
7.	Solapur, Latur, Osmanabad, Beed	9.03	31.26	1036.18	10.06	30.17	1107.89	10.35	30.12	1137.98
8.	Aurangabad, Jalna, Buldhana	2.79	30.14	306.92	2.95	29.58	318.53	3.33	27.71	336.79
9.	Parbhani, Nanded	1.99	33.24	241.45	2.03	33.25	246.40	2.14	32.12	250.89
10.	Akola, Amravati, Yavatmal	4.60	31.70	532.32	5.13	29.66	555.33	4.63	29.20	493.49
11.	Wardha, Nagpur, Bhandara	3.84	31.26	438.19	3.86	31.74	447.21	4.01	32.08	469.52
12.	Gadchiroli, Chandrapur	3.26	30.98	368.66	3.44	30.46	382.43	3.40	31.02	385.01
	Overall Deshi layers	79.72	31.86	9269.60	81.70	31.99	9539.88	85.93	31.35	9840.27
	Improved layers	34.34	69.59	8722.00	38.97	70.41	10026.00	43.17	70.68	11138.00
	Deshi + Improved layers	114.06	43.22	17991.60	120.67	102.40	19565.88	129.16	44.50	20978.27

#### 4.4 UTILISATION OF EGGS IN POULTRY KEEPER HOUSEHOLDS :-

From the poultry keeper households, data regarding production and disposal of eggs on the previous day of the visit, were also collected.

It is found from the data that out of the total eggs produced, 49 percent were disposed off at home for table purpose, while 13 percent were kept for hatching. About 30 percent eggs were sold out for table purpose and 1 percent for hatching purpose. It is noticed that there was about 2 percent breakage and spoilage in the total number of eggs produced.

#### 4.5 MORTALITY IN POULTRY :-

Details regarding deaths of poultry birds occurred due to various causes during the last four months prior to the visit in the poultry keeper households were collected and the same is presented in table no. 41.

TABLE NO. 41

Percentage distribution of deaths in Deshi poultry birds according to various causes of deaths

Sr. No.	Category of birds	Percentage of deaths due to					
		Diseases	Physical/Mechanical forces	Attack of animals	Attack of birds	Other reasons	Annual mortality
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Cocks	8.2	0.6	1.2	-	0.6	10.6
2.	Hens	7.1	0.2	0.3	-	0.1	7.7
3.	Cockerels	5.6	0.4	2.8	2.2	0.4	11.4
4.	Pullets	5.8	0.4	2.4	1.5	0.3	10.4
5.	Chicks	12.0	0.8	4.0	3.3	0.9	21.0
	Overall	8.9	0.5	2.3	1.7	0.5	13.9
		(63.7)	(3.7)	(16.7)	(12.1)	(3.8)	(100.0)

Note :- Figures in brackets indicate percentage of poultry birds died due to various reasons.



It is observed that maximum deaths occurred due to diseases (64 percent) followed by attack of animals (17 percent). The deaths due to physical or mechanical forces such as excess of heat or cold, etc. and due to attack of birds were about 4 and 12 percent respectively.

The annual mortality in poultry birds was observed to be 13.9 percent, it being maximum in chicks (about 21 percent) and minimum in hens (about 7.7 percent).

The disease-wise mortality classification in poultry is presented in table no. 42.

TABLE NO. 42

Disease-wise mortality classification in poultry

Sr.No.	Category of birds	Percentage of deaths due to			Total
		Ranikhet	Diarrhoea	Fowl Pox	
(1)	(2)	(3)	(4)	(5)	(6)
1.	Cocks	3.3	2.4	0.3	100.0
2.	Hens	6.5	17.6	2.6	100.0
3.	Cockerels	2.5	2.6	0.3	100.0
4.	Pullets	3.4	3.1	0.6	100.0
5.	Chicks	15.6	33.6	5.6	100.0
Total		31.3	59.3	9.4	100.0

Amongst the birds which died due to diseases about 31 percent died due to Ranikhet, 59 percent died due to Diarrhoea and 9 percent died due to fowl pox.

**4.6 FEEDING PRACTICES OF POULTRY BIRDS :-**

It is a common practice in villages to feed the birds with grains and cereals, twice in a day, once in the morning and then in the evening. The data on feeding are mainly collected for desi birds only. Very few households in the villages used readymade

poultry feed. Table no. 43 gives the information about grains fed either alone or in combination to the poultry birds in addition to what the birds may have consumed from the surroundings areas.

TABLE NO. 43

Households feeding different types of feed and average quantity fed per day/bird

Sr.No.	Name of feed	Percentage of households feeding the feed	Percentage of birds fed with	Average quantity of feed fed per bird per day (Gm.)
(1)	(2)	(3)	(4)	(5)
1.	Jawar	52.5	49.8	17
2.	Rice	25.1	24.3	20
3.	Jawar + Bajra	13.2	14.6	19
4.	Jawar + Rice	6.0	5.3	20
5.	Grains	2.8	2.7	16
6.	Mash	0.2	3.1	80
7.	Other	0.2	0.2	15
	Overall	100.0	100.0	21

It was observed that the major constituents of the feed fed to poultry birds were Jawar either alone or in combination followed by Rice. The overall average quantity of feed fed per day was 21 Grams.

4.7. COMMERCIAL POULTRY FARMS :-

During the year under report information about egg production alongwith allied information was collected from commercial poultry farms. Some important observations are tabulated from the data.

The information was collected from 40 farms and about 13 lakh layer birds. The table below indicates percentage distribution of farms according to layer strength and annual mortality percentage observed.

TABLE NO. 44

Annual Mortality Percentage

Sr.No.	Size of Poultry Farm	No. of farms	Total no. of birds observed	Mortality percentage
(1)	(2)	(3)	(4)	(5)
1.	Upto 1000	.. 1	1,158	11.3
2.	1001 - 5000	.. 8	19,648	10.9
3.	5001 - 10000	.. 4	29,554	8.1
4.	10001 - 15000	.. 3	35,878	9.2
5.	15001 - 20000	.. 5	88,485	8.8
6.	20001 - 25000	.. 1	21,446	9.4
7.	25001 - 30000	.. 4	1,10,106	18.4
8.	30001 - 35000	.. 2	68,665	12.2
9.	35001 - 40000	.. 2	76,061	11.1
10.	40001 - 45000	.. 3	1,29,508	14.0
11.	45001 - 50000	.. 1	48,529	11.1
12.	50001 & above	.. 6	6,41,214	13.8
★	Total all farms	.. 40	12,70,252	13.1

From the data collected from commercial poultry farms, it was observed that in some of the farms the high mortality occurred due to Dermatitis, prolapse, Egg bond, Ranikhet disease, etc.

LAYING PERCENTAGE IN COMMERCIAL FARMS :-

Data collected from the commercial poultry farms was grouped as per the size of the farms and laying percentage was worked-out, the same is given in Table no. 45.

TABLE NO. 45

Laying percentage in commercial poultry farms

Sr.No.	Size of the farm according to average number of layers		Laying percentage
(1)	(2)		(3)
1.	0	1000	78.20
2.	1001	5000	77.94
3.	5001	10000	67.80
4.	10001	15000	69.03
5.	15001	20000	66.17
6.	20001	25000	67.05
7.	25001	30000	72.42
8.	30001	35000	N.A.
9.	35001	40000	60.32
10.	40001	45000	N.A.
11.	45001	50000	73.74
12.	50001 & above		72.97
Total (Overall)			70.68

It was observed that farms having layers up to 1,000 had highest laying percentage.

## CHAPTER NO. V

WOOL PRODUCTION, GOAT MILK PRODUCTION AND MEAT PRODUCTION5.1 WOOL PRODUCTION :-

From the data collected in the survey, it was observed that sheep were reared in 0.7 percent households and there were 19.7 percent villages having sheep.

Villages having sheep were classified according to total number of sheep in the villages.

TABLE NO. 46

Distribution of villages according to sheep population

Sr.No.	Number of sheep		Percentage of villages			
			Summer	Rainy	Winter	Overall
(1)	(2)	(3)	(4)	(5)	(6)	
1.	Upto	10	18.4	13.2	10.3	13.9
2.	11 to	20	-	5.3	2.6	2.6
3.	21 to	30	18.4	18.4	20.5	19.1
4.	31 to	100	18.4	21.0	23.0	20.9
5.	101 to	200	21.2	21.0	17.9	20.0
6.	201 to	400	15.8	13.2	10.3	13.0
7.	401 to	600	-	2.6	5.1	2.5
8.	601 to	800	2.6	5.3	2.6	3.5
9.	801 to	1000	2.6	-	2.6	1.8
10.	Above 1000.		2.6	-	5.1	2.6
Total			100.0 (38)	100.0 (38)	100.0 (39)	100.0 (115)

Note :- Figures in brackets indicate number of villages.

It was observed that 16 percent of the villages were having sheep upto 20, while about 40 percent were having 21 to 100 sheep per village.

5.2 NUMBER OF SHEEP OBSERVED :-

A total of 6809 sheep from 208 flocks were observed for sheep rearing practices. The details are given in table no. 47.

TABLE NO. 47

No. of sheep observed

Sr.No.	Type of flock	No. of flocks	Number of sheep				Total
			Rams	Ewes	Lambs Male    Female		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Stationary ..	180	220	4131	267	554	5172
2.	Migratory ..	28	44	928	277	388	1637
Total ..		208	264	5059	544	942	6809

It is observed from the table no. 47 that about 76 percent sheep were from stationary flocks and remaining 24 percent sheep from migratory flocks.

5.3 ESTIMATED WOOL PRODUCTION :-

The estimates of wool production in the state, worked-out for 2 shearing seasons, are presented in table no. 48.

TABLE NO. 48

Estimated Wool Production

Sr.No.	Season	Estimated no. of sheep (lakh)	Estimated no. of sheep shorn (lakhs)	Average wool yield per sheep shorn (kg.)	Total wool production (M.T.)
(1)	(2)	(3)	(4)	(5)	(6)
1) <u>RAINY :-</u>					
	i) Rams+wether	2.62	2.58	0.322	83.002
	ii) Ewes	19.19	18.82	0.296	557.105
	iii) Lambs	7.58	4.21	0.159	66.894
	Total	29.39	25.61	0.276	707.002
2) <u>WINTER :-</u>					
	i) Rams+wether	2.66	2.59	0.320	82.805
	ii) Ewes	19.65	19.24	0.302	581.075
	iii) Lambs	7.60	3.91	0.164	64.134
	Total	29.91	25.74	0.283	728.014
3) <u>OVERALL :-</u>					
	i) Rams+wether	2.64	2.58	0.642	165.808
	ii) Ewes	19.42	19.03	0.598	1130.180
	iii) Lambs	7.59	4.06	0.323	131.078
	Total	29.65	25.67	0.559	1435.066

The estimated number of Rams/Wethers, Ewes and Lambs for Rainy Season were 2.62 lakhs, 19.19 lakhs and 7.58 lakhs respectively. The same for Winter Season were 2.66 lakhs, 19.65 lakhs and 7.60 lakhs.

The overall average estimated wool yield per sheep shorn worked-out to be 559 Grams, it being 598 Grams per ewe and 642 Grams per adult male. The estimated wool production for the State during the year was about 1435 M.T.

5.4 MORTALITY IN SHEEP :-

The data regarding deaths due to various reasons was collected from the sheep keeper households at the time of enumeration. It was observed that the annual mortality in sheep was found to be 6.3 percent

5.5 SAMPLE SIZE OBSERVED FOR GOAT MILK PRODUCTION AND GOAT REARING PRACTICES :-

Of the total villages, selected, in 94.9 percent villages goats were observed. A total number of 11615 of goats kept per household and from these 14890 goats in-milk were observed for goat milk production. It was observed that the percentage of in-milk goats to milch goats were about 50.2 percent during the year under report.

5.6 ESTIMATED GOAT MILK PRODUCTION :-

The details about estimates of goat milk production for groups of districts in State, during three seasons and for the entire year are given in table nos. 49, 50, 51 and 52 respectively.

TABLE NO. 49

Estimated goat milk production for Summer Season

Group No.	Group of Districts	Estimated No. of in-milk goats (laks)	Average daily milk yield/goat in-milk (kgs)	Total milk production (1000 ltrs.)
(1)	(2)	(3)	(4)	(5)
1.	Gr. Bombay	0.05	0.109	0.061
2.	Thane, Raigad	6.94	0.109	1.257
3.	Ratnagiri, Sindhudurg	0.44	0.197	0.540
4.	Nashik, Dhule, Jalgaon	4.39	0.191	10.220
5.	Ahmednagar, Pune	4.41	0.131	9.734
6.	Satara, Sangli, Kolhapur	3.54	0.213	9.212
7.	Solepur, Latur, Osmanabad, Beed	4.79	0.221	12.914
8.	Aurangabad, Jalna, Buldhana	2.94	0.188	6.739
9.	Parbhani, Nanded	2.56	0.138	4.308
10.	Akola, Anravati, Yavatmal	3.16	0.106	4.092
11.	Wardha, Nagpur, Bhandara	2.08	0.120	3.044
12.	Gadchiroli, Chandrapur	1.22	0.111	1.657
	State Total	30.52	0.171	63.808



TABLE NO. 50

Estimated goat milk production for Rainy Season

Group No.	Group of Districts	Estimated no. of in-milk goats (lakhs)	Average daily milk yield per goat in-milk (kg.)	Total milk production ('000 M.T.)
(1)	(2)	(3)	(4)	(5)
1.	Gr. Bombay	0.05	0.126	0.071
2.	Thane, Raigad	0.95	0.126	1.466
3.	Ratnagiri, Sindhudurg	0.43	0.126	0.671
4.	Nashik, Dhule, Jalgaon	4.34	0.202	10.785
5.	Ahmednagar, Pune	4.34	0.194	10.364
6.	Satara, Sangli, Kolhapur	3.17	0.200	7.792
7.	Solapur, Latur, Osmanabad, Beed	4.74	0.211	12.309
8.	Aurangabad, Jalna, Buldhana	2.86	0.187	6.580
9.	Parbhani, Nanded	2.58	0.139	4.409
10.	Akola, Pravara, Yavatmal	3.31	0.117	4.767
11.	Wardha, Nagpur, Bhandara	2.11	0.116	3.012
12.	Gadchiroli, Chandrapur	1.20	0.112	1.647
State Total		30.08	0.173	63.873

TABLE NO. 51

Estimated goat milk production for Winter Season

Group No.	Group of Districts	Estimated no. of in-milk goats (lakhs)	Average daily milk yield per in-milk goat (kg.)	Total milk production ('0000 M.L.)
(1)	(2)	(3)	(4)	(5)
1.	Gr. Bombay	0.05	0.160	0.088
2.	Thane, Raigad	0.93	0.160	1.778
3.	Ratnagiri, Sindhudurg	0.43	0.160	0.834
4.	Nashik, Dhule, Jalgaon	4.32	0.208	10.793
5.	Ahmednagar, Pune	4.34	0.191	9.948
6.	Satara, Sangli, Kolhapur	3.51	0.180	7.571
7.	Solapur, Latur, Osmanabad, Beed	4.74	0.242	13.763
8.	Aurangabad, Jalna, Buldhana	2.84	0.186	6.332
9.	Parbhani, Nanded	2.55	0.146	4.471
10.	Akola, Amravati, Yavatmal	3.26	0.105	4.109
11.	Wardha, Nagpur, Bhandara	2.12	0.114	2.906
12.	Gadchiroli, Chandrapur	1.18	0.113	1.602
State Total		30.27	0.177	64.196

TABLE NO. 52

Estimated goat milk production for the year (Overall)

Group No.	Group of Districts	Estimated no. of in-milk goats (lacs)	Average daily milk yield per in-milk goat (kg.)	Total milk production (000 M.T.)
(1)	(2)	(3)	(4)	(5)
1.	Gr. Bombay	0.05	0.131	0.220
2.	Thane, Raigad	0.94	0.131	4.500
3.	Ratnagiri, Sindhudurg	0.43	0.137	2.075
4.	Nashik, Dhule, Jalgaon	4.35	0.200	31.797
5.	Ahmednagar, Pune	4.36	0.189	30.046
6.	Satara, Sangli, Kolhapur	3.41	0.198	24.575
7.	Solapur, Latur, Osmanabad, Beed	4.76	0.224	38.986
8.	Aurangabad, Jalna, Buldhana	2.88	0.187	19.652
9.	Parbhani, Nanded	2.56	0.141	13.187
10.	Akola, Amravati, Yavatmal	3.25	0.109	12.968
11.	Wardha, Nagpur, Bhandara	2.10	0.117	8.953
12.	Gadchiroli, Chandrapur	1.20	0.112	4.908
State Total		30.29	0.173	191.877

It is observed from table no. 52 that total goat milk production for the State was estimated as per 191.877 thousand M.T. during the year. The average milk yield per goat in-milk per day was 173 Grams.

### 5.7 MORTALITY IN GOATS :-

The data regarding deaths due to various reasons was collected from the goat keeper households at the time of enumeration. It was observed that the annual mortality in goats was found to be 4.7 percent.

### 5.8 ESTIMATED MEAT PRODUCTION :-

The meat production from different species of livestock was estimated for the State and on the yearly basis. The details are given in table no. 53.

TABLE NO. 53

Estimated meat production

Sr.No.	Species	Average meat production per animal(kg.)	Estimated no.of animals slaughtered (lakhs)	Total meat production ('000'M.T.)
(1)	(2)	(3)	(4)	(5)
1.	Cattle	120.940	3.97	47.995
2.	Buffalo	134.590	2.13	28.720
3.	Sheep	10.590	16.96	16.899
4.	Goat	10.240	36.16	37.030
5.	Pig	20.980	2.37	4.969
Total		—	—	135.613

From the above table it is seen that the average meat produced per sheep is higher than that of goat. Out of the total meat production 35 percent was from cattle, 21 percent from buffaloes, 12 percent from sheep, 27 percent from goats and remaining 4 percent from pigs.

5.9 HIDES AND SKINS PRODUCTION :-

The number of hides and skins obtained during the year were worked-out for the state as a whole. The details are given in table no. 54 below.

TABLE NO. 54

Estimated number of hides and skins

Sr.No.	Production of	Category	Estimated no. of hides/skins (laks)
(1)	(2)	(3)	(4)
1.	Hides	.. Cattle ..	4.59
		.. Buffalo ..	2.51
		Total	7.10
2.	Skins	.. Sheep ..	17.15
		.. Goat ..	36.63
		Total	53.78

TABLE NO. 55

Comparative statement showing estimated annual production of milk, egg, wool and meat in Maharashtra State from the year 1970-71 to 1990-91

Sr.No.	Year	Milk ('000'M.T.)	Eggs (Crores)	Wool (M.T.)	Meat ('000'M.T.)
(1)	(2)	(3)	(4)	(5)	(6)
1.	1970-71	.. 1,062	69	1,025	70
2.	1971-72	.. 1,036	66	1,119	70
3.	1972-73	.. 949	67	911	76
4.	1973-74	.. 1,003	70	936	76
5.	1974-75	.. 1,195	73	970	79
6.	1975-76	.. 1,280	77	1,016	78
7.	1976-77	.. 1,304	78	890	83
8.	1977-78	.. 1,522	81	923	93
9.	1978-79	.. 1,540	91	1,047	106
10.	1979-80	.. 1,635	103	1,125	122
11.	1980-81	.. 1,756	115	1,217	147
12.	1981-82	.. 1,909	124	1,245	160
13.	1982-83	.. 2,009	129	1,304	158
14.	1983-84	.. 2,228	135	1,309	151
15.	1984-85	.. 2,358	143	1,311	160
16.	1985-86	.. 2,466	151	1,339	159
17.	1986-87	.. 2,459	159	1,357	154
18.	1987-88	.. 2,657	172	1,373	160
19.	1988-89	.. 2,800	180	1,388	147
20.	1989-90	.. 3,266	196	1,411	149
21.	1990-91	.. 3,735	210	1,435	136

Note : - Milk production upto the year 1976-77. is exclusive of goat milk as no survey was conducted for goat milk production.

CHAPTER NO. VI

SUMMARY

Integrated Survey Scheme has been implemented by the Department for estimation of annual production of four important livestock products, viz. Milk, Egg, Wool and Meat and to study the livestock keeping practices followed in the State. The present report deals with the results obtained from the data collected during 1990-91.

6.1 SAMPLING DESIGN :-

The sampling design for the survey was a multistage stratified random sampling. Thirty districts of the state were divided into 12 groups, each consisting of about 1 to 4 districts. Gr. Bombay district was treated as one separate group. From remaining 11 groups of districts, 20 villages were selected randomly from each group for every season and one survey assistant was allotted the work of five villages for collection of data.

6.2 RESULTS

1. A total of 590 villages were visited by the Survey Assistants for collection of data. The average number of households per village were 186.

2. About 22 percent households had no livestock or poultry. About 62 percent households had bovine, and 32 percent households had poultry. While 26 percent had goats and only 1 percent households reared sheep.

3. The data regarding bovine keeping practices were collected for 44,994 bovines from 10,922 bovine keeper households and a total of 13,840 animals were observed for milk production.

4. The estimated number of in-milk cows was 25.78 lakhs and that of in-milk buffaloes was 16.25 lakhs.

5. The average daily milk yield per in-milk cow was estimated as 1.901 kg. and for in-milk buffalo as 2.832 kg.

6. The annual milk production in the state was estimated as 3543 thousand tonnes (from bovines) and 3735 ('000' M.T.) inclusive of goat milk.

7. Per capita per day availability of milk was found to be 131 Grams ( Cow milk + buffalo milk) and 138 Grams if goat milk is included.

8. About 14 percent cattle and 12 percent buffaloes were kept on grazing alone.

9. The average quantity of the dung dropped in the shed was 3.0 kg. per day per animal. The total quantity of dung collected during the year for the state was estimated as 28515 thousand M.T.

10. The annual mortality observed in cattle class was about 1.5 percent and that in buffaloes 3.8 kpercent.

11. A total of 20,864 households were observed for egg production and poultry rearing practices. From these about 62 thousand layers were observed for egg production.

12. The estimated number of deshi layers for the state during the year was about 606 lakhs and that of improved layers was 43 lakhs. The laying percentage observed was 31.35 and 70.53 in deshi layers and improved layers, respectively.

13. The estimated total egg production was worked-out as 209.78 crores. Out of this, the contribution from deshi layers was 98.40 crores and remaining 111.38 crores from improved layers.

14. The per capita per annum availability of eggs was 28 eggs during the year under report.

15. The daily average quantity of grains fed per poultry bird was 21 Grams.



16. The annual mortality in poultry was about 13.9 percent, it being maximum in chicks (about 21 percent).

17. The average wool yield per sheep shorn during the year was 559 Grams. The estimated annual wool production for the State was 1435 tonnes.

18. The annual mortality in sheep was 6.3 percent.

19. The average daily milk yield per goat in-milk was 173 Grams. The estimated annual goat milk production was 192 thousand tonnes.

20. The annual mortality percentage in goats was 4.7.

21. The average meat production per animal was 120.9 kg. for cattle, 134.6 kg. for buffalo, 10.6 kg. for sheep, 10.2 kg. for goat and 21.0 kg. for pigs. The total annual meat production was estimated as 136 thousand tonnes.

22. The number of pieces of hides obtained during the year was estimated as 7.10 lakhs and that of skins as 53.78 lakhs.

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