

PREFACE

The Department of Animal Husbandry, Maharashtra State, Pune 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 sixteen such annual surveys have been conducted in the State, in succession. The present report is based on the findings of the seventeenth annual survey in the series.

As such the report contains information on Milk, Egg, Wool and Meat production in the State during 1986-87. 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 to the office staff of the Integrated Survey Scheme of the Department. We are also indebted to the Indian Agricultural Statistics/Institute, New Delhi, for providing the sampling technique for the survey. / Research

It is hoped that the finding of the present survey will be useful to the planners, administrators and those interested in Animal Husbandry and Dairying. The results of the survey are given at the beginning of the report in form of "Results at a Glance" for the sake of convenience.

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Place :- Pune-411 001
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Director of Animal Husbandry,
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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 1936-37.

Sr.No.	Item.	Unit	Figure
(i)	(ii)	(iii)	(iv)
1.	<u>Size of sample observed.</u>		
	i) Districts observed.	Number	30
	ii) Villages observed.	Number	590
2.	<u>Characteristics of villages.</u>		
	1) Having bovine.	Percentage	100.0
	ii) Having poultry.	---do---	98.0
	iii) Having sheep.	---do---	18.3
	iv) Having goats.	---do---	95.6
	v) Average number of households per village.	Number	194
3.	<u>Households rearing.</u>		
	i) Bovine.	Percentage	63.6
	ii) Poultry	---do---	32.5
	iii) Sheep.	---do---	0.8
	iv) Goats.	---do---	26.1
	v) No livestock & poultry.	---do---	22.5
4.	<u>Availability of facility for veterinary aid.</u>		
	i) Within village.	Percentage	7.7
	ii) Up to 5 kms.	---do---	47.1
	iii) Average instance of veterinary aid.	kms.	6.2
II. <u>MILK PRODUCTION AND BOVINE KEEPING PRACTICES.</u>			
1.	<u>Size of sample observed.</u>		
	i) Bovine keeper households.	Number	10,820
	ii) Bovines observed for detailed study.		48,852
	iii) In-milk bovines for milk recording		
	(a) Cows	Number	6,552
	(b) Buffaloes.	---do---	4,046
2.	<u>Estimated number of in-milk bovines</u>		
	i) <u>Cows in-milk</u>		
	a) Doshi	Lakhs	29.47
	b) Crossbred	---do---	1.80
	c) Total	---do---	22.27
	ii) Buffaloes in-milk	---do---	15.10

	(ii)	(iii)	(iv)
3. <u>Average daily milk yield per animal in milk.</u>			
1) Cow.			
a) Deshi.	Kg (Litre)		0.970(0.944)
b) Crossbred.	--do--		5.010(4.872)
c) Overall.	--do--		1.297(1.262)
ii) Buffalo.	--do--		2.548(2.478)
4. <u>Estimated annual milk production.</u>			
i) Cow milk.			
a) Deshi.	Lakh kg. (lakh litres)		7250.6 (7052.7)
b) Crossbred.	--do--		3292.4 (3202.5)
ii) Buffalo milk.	--do--		12557.1 (12214.3)
iii) Total.	--do--		23100.1 (22469.5)
5. <u>Per capital per day availability of milk (cow+Buffalo milk).</u>	gm.		91
6. <u>Feeding practices of bovines.</u>			
i) Cattle kept on grazing alpa	Percentage		11.6
ii) Buffaloes kept on grazing alone	--do--		7.5
7. <u>Average quantity of feed/fodder fed per day per animal (including animals kept on grazing alone, also)</u>			
(a) Cattle :			
(i) Green.	Kg.		2.388
(ii) Dry.	Kg.		5.185
(iii) Concentrates.	Kg.		0.110
(b) Buffaloes.			
(i) Green	??		3.127
(ii) Dry.	??		5.220
(iii) Concentrates.	??		0.547
8. <u>Average quantity of dung collected in cattle shed per bovine per day.</u>	Kg.		3.469
9. <u>Estimated annual quantity of dung collected.</u>	'000M.T.		26321.5
10. <u>Annual mortality in bovines.</u>			
i) Cattle.	%		1.7
ii) Buffalo.	%		5.4

(i)	(ii)	(iii)	(iv)
<u>III) EGG PRODUCTION AND POULTRY REARING PRACTICES.</u>			
1.	<u>Size of sample observed.</u>		
	i) Total poultry keeper households.	Number	21,303
	ii) <u>Total poultry birds.</u>		
	a) Cocks.	-do-	10,742
	b) Hens.	-do-	65,128
	c) Cockerels	-do-	9,141
	d) Pullets.	-do-	13,897
	e) Chicks.	-do-	50,435
	f) Total.	-do-	149,343
2.	<u>Estimated number of layers.</u>		
	a) Deshi.	Lakh	75.76
	b) Improved.	-do-	28.24
	c) Total.	-do-	104.00
3.	<u>Average number of eggs laid per layer per year.</u>		
	a) Deshi.	Number	116
	b) Improved.	-do-	252
4.	<u>Estimated annual egg production.</u>		
	a) Deshi.	Lakh	8,771.75
	b) Improved.	Lakh	7,116.48
	c) Total.	Lakh	15,888.24
5.	<u>Per capita per annum availability of eggs.</u>		
		Number	23
6.	<u>Average number of poultry birds per 100 poultry keeper.</u>		
	a) Cocks.	Number	50
	b) Hens.	-do-	306
	c) Cockerels.	-do-	43
	d) Pullets.	-do-	65
	e) Chicks.	-do-	237
	f) Total.	-do-	701
7.	<u>Average feed supplied per poultry bird per day.</u>		
		gm.	17
8.	<u>Annual mortality in poultr.</u>		
		Percentage	15.5

(i)	(ii)	(iii)	(iv)
<u>IV) WOOL PRODUCTION AND SHEEP REARING PRACTICES.</u>			
1.	Sample size observed for detailed study.		
	a) Number of flocks.	Number	127
	b) Number of sheep	-do-	18,751
2.	<u>Estimated number of sheep.</u>		
	i) Rams/Wethers.	Lakh	2.34
	ii) Ewes.	Lakh	18.51
	iii) Lambs.	Lakh	6.74
	iv) Total.	Lakh	27.59
3.	<u>Estimated number of sheep shorn.</u>		
	1) Rams/Wethers.	Lakh	2.27
	ii) Ewes.	Lakh	17.86
	iii) Lambs.	Lakh	3.83
	iv) Total.	Lakh	23.96
4.	<u>Estimated annual wool yield/per sheep shorn.</u>		
	i) Rams/wethers	Kg.	0.622
	ii) Ewes.	Kg.	3.602
	iii) Lambs.	Kg.	0.366
	iv) Overall.	Kg.	0.566
5.	Estimated annual wool production.	M.T.	1357
6.	Mortality in sheep.	Percent.	3.8
<u>V) GOAT MILK PRODUCTION AND GOAT REARING PRACTICES.</u>			
1.	<u>Sample size observed.</u>		
	i) Goat keeper households.	Number	13,389
	ii) Inmilk goats for milk production.	-do-	17,362
2.	Average daily milk yield per goat in-milk.	Kg. (Litre)	0.173 (0.168)
3.	Goat inmilk to milch goats.	Percentage.	46.1
4.	Estimated No. of goats inmilk.	Lakh	2347
5.	Estimated total goat milk production.	Lakh Kg.	1485
		(1000 Litres)	(1485)

(v)

(i) (ii) (iii) (iv)

VI) MEAT PRODUCTION.

1. Average meat production per animal.

a) Cattle.	Kg.	120.906
b) Buffalo	Kg.	144.513
c) Sheep.	Kg.	110.213
d) Goat.	Kg.	10.227
e) Pig	Kg.	24.560

2. Estimated number of animals slaughtered.

a) Cattle.	Lakh	4.35
b) Buffaloes.	Lakh	2.08
c) Sheep .	Lakh	20.45
d) Goats.	Lakh	41.19
e) Pig.	Lakh	2.37

3. Estimated annual meat production. '000 M.T. 153.552

4. Estimated number of

a) Hides.	Lakh pieces.	10.68
b) Skins.	-do-	65.88

1.1 Introduction.

The present report is based on the seventeenth 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 the livestock and poultry keeping practices followed during the year 1986-87.

The scheme was partially strengthened during 1984-85 and accordingly the data on production of milk and eggs were collected for group 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 363 tahsils, comprising 39,354 inhabited villages and 307 cities and town units as per 1981 human population census.

1.3 Livestock population.

According to 1982 livestock census, the Maharashtra State had 309.19 lakh livestock. This constituted 201.34 lakh (65 percent) bovines, 77.05 lakh (25 percent) goats, 26.71 lakh (9 percent) sheep, 3.01 lakh pigs and remaining 1.68 lakhs were horses, donkeys and mules. The total poultry was 198.44 lakh.

1.3.1 Variation in livestock population :

The following table gives the percentage variation of livestock and poultry population of 1982 census over that of 1978 census.

Table No.1
Comparison of livestock census figures.

Sr. No.	Category.	Population (1000) As per		Percentage increase 1982 over 1978 census.
		1982 census	1978 census	
1.	2.	3.	4.	5.
1)	Cattle	15162	15213	6.20
2)	Buffaloes.	3972	3899	1.87
3)	Sheep.	2671	2655	1.33

1.	2.	3.	4.	5.
4) Goats.	7705	7563	1.88	
5) Pigs.	301	226	33.19	
6) Other.	108	130	8.00	
7) Total livestock	30919	29642	4.31	
8) Total poultry.	19844	18751	5.83	

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 1986-87 as shown below :

- 1) Summer season : March 1986 to June 1986.
- 2) Rainy season : July 1986 to October 1986.
- 3) Winter season : November 1986 to February 1987.

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 :

Group No.	Districts.
1)	Greater Bombay
2)	Thane, Raigad.
3)	Ratnagiri, Sindhudurg.
4)	Nashik, Dhule, Jalgaon.
5)	Ahmednagar, Pune.
6)	Satara, Sangli, Kolhapur.
7)	Solapur, Beed, Osmanabad, Latur.
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 Greater 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 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 seasonal estimates the annual estimates for the State were worked out.

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, fresh for each season, from a group of districts. As such 4 Survey Assistants were working in each group. For Greater 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 4 day's 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 below :-

Table No. 2
Details of data collection.

Sr. No.	Schedule No.	Type of information collected	No. of households observed per day.
1)	B ₁	Milk production and bovine keeping practices.	2
2)	B ₂	Utilisation of milk	1
3)	P ₁	Changes in poultry number	10
4)	P ₂	Egg production and poultry keeping practices.	5
5)	W ₁ , W ₂ , W ₃	Sheep rearing practices and wool production.	3
6)	S ₁	Goat milk production and goat rearing practices.	3
7)	T ₁	Meat production in households having livestock or poultry.	10
8)	T ₂	Meat production in households having no livestock and poultry.	2
9)	T ₃	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 along with 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 & 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.)	680-1250	1	-
2)	Research Officer (GSS. Cl. II)	600-1150	1	1
3)	Livestock Development Officer (MAHS. Cl. II)	600-1150	8	-
4)	Investigator	500-900	3	1
5)	Statistical Assistant	335-680	6	4
6)	Survey Assistant (Jr. Clerk Cadre).	260-495	28	1
7)	Survey Assistant (Livestock Supervisor).	290-560	22	2
8)	Accountant.	335-680	1	-
9)	Senior Clerk	335-680	2	-
10)	Junior Clerk.	260-495	1	-
11)	Peons.	200-280	3	-
Total :-			76	9

The field data were collected by 45 Survey Assistants (1 Survey Assistant for Gr. Bombay and 4 each for remaining 11 group of districts). Five Survey Asstts. were kept as leave reserve. The livestock Development Officer supervised the field 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 Asstt. Director was the overall incharge of the scheme for field work as well as administrative work.

CHAPTER-II.

2.1 Characteristics of sample villages :

During the year/report a total of 590 villages were observed for collection of data such as land possessed, / under breeding, feeding and management practices followed and obtaining details re regarding production and utilisation of milk, eggs, wool and meat.

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

Table No 4.

Distribution on villages having livestock/poultry.

Sr. No.	Season	Percentage of villages having			
		Bovine	Poultry	Goats	Sheeps.
(1)	(2)	(3)	(4)	(5)	(6)
1)	Summer.	100.0	99.5	95.1	18.0
2)	Rainy.	100.0	96.0	95.5	18.5
3)	Winter.	100.00	98.4	96.2	18.4
Overall		100.0	98.0	95.6	18.3

It is seen from the Table No. 4 that bovine were found in all the villages, while poultry and goats were found in 99.0 and 95.6 percent of villages respectively. Sheep were found in only 18.3. percent villages, because sheep population is mainly concentrated in pune division of the State.

2.2 Number of household per village :

During the year, livestock and poultry were enumerated by Survey Assistants from a total of 1,14,526 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.

Distribution of villages according to number of households.

Sr. No.	Number of households.	Percentage of villages.			
		Summer	Rainy.	Winter	Overall
(1)	(2)	(3)	(4)	(5)	(6)
1.	Upto 50	2.0	--	--	0.7
2.	50 to 100	11.7	3.5	4.3	6.6
3.	101 to 150	23.9	27.5	18.4	23.4
4.	151 to 200	24.9	22.0	30.8	25.8
5.	201 to 300	26.3	39.5	36.2	33.9
6.	301 to 400	11.2	7.0	9.7	9.3
7.	401 to 600	--	0.5	0.6	0.3
8.	Above 600	--	--	--	--
Total :		100.0	100.0	100.0	100.0
		(205)	(200)	(185)	(590)
Average number of households per village.		181	187	217	194

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

It is seen from the above table, that about 7 percent villages had upto 100 households, 49 percent villages had in the range of 101 to 200 households, while 34 and 10 percent villages had from 201 to 300 and more than 300 households per village, respectively. The overall number of households per village was found to be 194.

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 and or poultry in combination	None	Other
1.	2.	3.	4.	5.	6.	7.	8.	
1)	Households rearing only one type of livestock or poultry	27.6	5.9	5.5	Neg			
2)	Total households rearing livestock or poultry in combination	63.6	31.5	26.1	0.8	38.5	22.5	

-(Contn. 7)

From the total households observed, it was found that 63.6 percent households reared bovine, 31.5 p.c. reared poultry and 26.1 p.c. households reared goats either along 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, ect. 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 distances.

Sr. No.	Facility.	Percentage of villages for which it is available at a distance of (Kms.)					Average distance (Kms.)
		0 to 1.0	1.0 to 2.5	2.5 to 5.0	5.0 to 10.0	Above 10.0	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1)	Veterinary aid	7.7	23.9	23.2	23.9	11.3	6.2
2)	Artificial insemination.	6.3	21.2	22.3	32.7	17.5	7.7
3)	Veterinary dispensary.	2.5	12.1	14.6	23.3	47.5	20.7
4)	Market for cattle feed.	1.7	12.5	13.2	29.4	43.2	11.4
5)	Market for milk & milk products.	12.7	16.7	14.2	27.5	28.9	8.5
6)	Market for cattle.	1.1	7.8	8.3	26.3	56.5	15.3
7)	Market for eggs	2.2	12.3	13.9	33.3	38.3	10.4
8)	Market for wool	1.5	5.0	7.3	24.2	62.0	23.4
9)	Market for meat	2.5	14.5	16.0	32.4	34.6	9.6

(Number of villages observed were 590).

It may be observed that veterinary aid or veterinary dispensaries services were available in 10.2 percent villages in village it self & the average distance at which these facilities were available was 6.2 K.m.. The artificial insemination facility was available in 6.3 percent villages in village itself & average distance at which this facility was available was 7.7 Kms. . The Cattle feed was available in village it-self in the case of only 1.7 percent village & average distance at which cattle feed was available was 11.4 percent.

2.5 Average number of livestock and poultry reared per 100 households.

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

Table No. 8

Average number of livestock/poultry per 100 households.

Sr. No.	Category.	Inmilk	Dry and not calved even once.	Adult males.	Young stock.	Total.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1)	Cattle	27	49	94	59	229
2)	Buffalo.	15	18	3	19	55
3)	Poultry.	-	-	-	-	219
4)	Sheep.	-	-	-	-	27
5)	Goats.	-	-	-	-	113

It is seen from the above table that average no. of cattle reared per 100 households was 229 the buffalo class bovines 55, goats 113 and Sheep 27. The same for poultry was 219.

(Contu-...9./-)

CHAPTER ---III.

3.1 Milk Production and bovine keeping practices

The estimates of milk production for 12 groups of districts including Greater Bombay during each season was obtained for indigenous cows and buffaloes separately. It was based on (i) estimate of average daily milk yield per animal in-milk (ii) estimated number of animals in-milk and (iii) number of days in the season. The results are based on 8924 cows and 5026 buffaloes observed for milk recording during the year.

Attempts were also been made from this year 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 work 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.

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 number of animals (in lakhs)			
		In-milk		Milch	
		Indigenous cows.	Buffaloes	Indigenous cows.	Buffaloes
(1)	(2)	(3)	(4)	(5)	(6)
1)	Greater Bombay.	0.02	0.46	0.03	0.49
2)	Thane, Raigad.	1.25	0.87	2.70	1.29
3)	Ratnagiri, Sindudurg.	0.79	0.36	1.81	0.63
4)	Nashik, Dhule, Jalgaon.	2.72	1.59	6.49	2.80
5)	Ahmednagar, Pune.	1.98	1.19	4.99	1.96

(1)	(2)	(3)	(4)	(5)	(6)
6)	Satara, Sangli, Kolhapur,	1.26	3.83	2.56	5.87
7)	Solapur, Latur, Osmanabad, Beed.	2.63	1.69	5.08	2.87
8)	Aurangabad, Jalna Buldhana.	1.90	0.67	4.03	1.18
9)	Parbhani, Nanded.	1.94	0.88	4.26	1.58
10)	Akola, Amravati, Yavatmal.	2.54	1.01	6.44	1.92
11)	Wardha, Nagpur, Bhandara.	1.99	0.65	5.49	1.23
12)	Gadchiroli, Chandrapur.	1.37	0.26	3.29	0.53
	State total .	20.39 (4.34)	13.46 (3.08)	47.17	22.35

Crossbred cows for the State.	1.80	--	2.98	--
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Note :- Figures in brackets indicate P.S.Es.

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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)			
		Inmilk		Milch	
(1)	(2)	(3)	(4)	(5)	(6)
		Indige nous cows	Buffalo	Indige nous cows	Buffalo
1)	Greater Bombay.	0.02	0.46	0.03	0.49
2)	Thane, Raigad.	1.27	0.88	2.64	1.33
3)	Ratnagiri, Sindudurg	0.83	0.37	2.97	0.64
4)	Nashik, Dhule, Jalgaon	2.72	1.60	6.78	2.90
5)	Ahmednagar, Pune.	1.96	1.13	4.91	1.97
6)	Satara, Sangli, Kolhapur.	1.31	3.72	2.72	5.62
7)	Solapur, Latur, Osmanabad, Beed.	2.50	1.63	5.22	2.78
8)	Aurangabad, Jalna Buldhana.	1.91	0.71	4.12	1.24
9)	Parbhani, Nanded.	1.94	0.88	4.20	1.60
10)	Akola, Amravati, Yavatmal.	2.50	0.95	6.31	1.83
11)	Wardha, Nagpur Bhandara.	1.98	0.60	5.50	1.14
12)	Gadchiroli, Chandra- pur.	1.40	0.25	3.36	0.51
	State total	20.34 (5.88)	13.18 (5.00)	47.76	22.05
	Crossbred cows for the State.	1.77	--	2.99	--

(Cont)

Table No. 11.

Estimated number of in-milk animalMilch animal for the
Winter season.

Sr. No.	Group of districts.	Estimated number of animals (in lakhs)			
		In-milk		Milch	
		Indige- nous cows.	Buffaloes.	Indige- nous cows.	Buffaloes
1)	(2)	(3)	(4)	(5)	(6)
1)	Gr Bombay	0.02	0.46	0.03	0.49
2)	Thane, Raigad.	1.22	0.88	2.71	1.32
3)	Ratnagari, Sindudurg.	0.79	0.37	1.83	0.64
4)	Nashik, Dhule Jalgaon.	2.74	1.71	6.43	2.98
5)	Ahmednagar, Pune	2.04	1.23	4.94	1.87
6)	Satara, Sangali Kolhapur.	1.27	3.88	2.61	5.82
7)	Solapur, Latur, Osmanabad, Beed	2.70	1.74	5.22	2.82
8)	Aurangabad, Jalna Buldhana.	1.94	0.71	4.06	1.24
9)	Parbhani, Nanded	1.92	0.91	4.37	1.66
10)	Akola, Amravati, Yeetmal.	2.62	1.02	6.51	1.88
11)	Wardha, Nagpur, Bhandara.	2.01	0.66	5.56	1.20
12)	Gadchiroli, Chandrapur.	1.42	0.28	3.40	0.53
State Total :-		20.69	13.85	47.67	22.45
		(4.06)	(3.95)		
Gross-bred cows for the state.		1.83	--	3.03	--

(Note :- Figures in brackets indicate P.S.Es.)

12
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	Buffa- loes	Indige- nous cows	Buffa- loes
1	2	3	4	5	6
1.	Greater Bombay	0.02	0.46	0.03	0.49
2.	Waranasi, Raigad	1.25 (3.3)	0.88 (10.9)	2.68 (4.7)	1.31 (7.4)
3.	Ratnagiri, Sindhudurg	0.80 (1.3)	0.37 (5.7)	1.87 (3.9)	0.64 (6.7)
4.	Nashik, Dhule, Jalgaon	2.73 (3.8)	1.63 (7.2)	6.57 (6.0)	2.90 (6.2)
5.	Ahmadnagar, Pune	1.99 (3.6)	1.18 (12.4)	4.95 (2.3)	1.94 (7.2)
6.	Satara, Sangli, Kolhapur	1.28 (4.9)	3.81 (5.5)	2.63 (5.2)	5.77 (5.9)
7.	Solapur, Latur, Osmanabad, Beed	2.61 (2.4)	1.69 (7.0)	5.17 (4.4)	2.82 (4.8)
8.	Aurangabad, Jalna, Buldana	1.91 (2.7)	0.69 (9.5)	4.07 (3.6)	1.22 (8.0)
9.	Parbhani, Nanded	1.94 (2.6)	0.89 (6.0)	4.27 (3.0)	1.61 (7.3)
10.	Akola, Amravati, Yavatmal	2.55 (5.8)	1.00 (6.4)	6.42 (4.6)	1.87 (5.1)
11.	Wardha, Nagpur, Bhandara	1.99 (5.3)	0.64 (8.8)	5.52 (5.5)	1.19 (8.2)
12.	Gadchiroli, Chandrapur	1.40 (3.7)	0.26 (8.3)	3.35 (2.8)	0.52 (8.3)
State Total		20.47 (3.7)	13.50 (7.00)	47.53 (4.2)	22.28 (6.1)
% Standard error		2.78	2.35	-	-
Grossbred and exotic cows		1.80 (40.6)	-	3.00 (59.8)	-

(Note : figures in brackets indicate percentage increase over census figures of 1982)

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The above table indicates that during the year 1966-67 as compared to 1982 census in the case of in-milk other than Indigenous cows the percentage increase for State as a whole comes to 3.7 percent. The same for crossbred cows and buffaloes comes to 40.6 percent and 7.00 percent respectively. In the case of milch animals the percentage increase for the state for I.C., Crossbred cows and Buffaloes comes to 4.2, 59.8 and 6.1 percent respectively. The percentage increase in Crossbred cows is note worthy and is a result of crossbreeding programme in the state. Due to crossbred programme percentage increase in Indigenous crossbred cows/comparatively low. /_ is

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 the Summer, Rainy and Winter seasons are presented in Table No. 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.	Name of the Districts	Per day average milk yield (Kg.)			
		Indigenous cow		Buffalo	
		In-milk	Milch	In-milk	Milch
1.	Greater Bombay	5.150	3.433	5.306	4.981
2.	Thane, Raigad	0.666	0.308	2.696	1.818
3.	Ratnagiri, Sindhudurg	0.350	0.153	0.904	0.517
4.	Nashik, Dhule, Jalgaon	1.127	0.472	2.374	1.348
5.	Ahmadnagar, Pune	1.021	0.405	2.319	1.408
6.	Satara, Sangli, Kolhapur	1.041	0.512	2.579	1.683
7.	Solepur, Latur, Osmanabad, Beed	1.452	0.752	2.350	1.384
8.	Aurangabad, Jalna, Buldhana	0.938	0.442	2.234	1.268
9.	Parbhani, Nanded	1.020	0.465	1.451	0.808
10.	Akola, Amravati, Yavatmal	0.913	0.360	2.204	1.159

1	2	3	4	5	6
11.	Wardha, Nagpur, Bhandara	0.752	0.273	2.820	1.490
12.	Gadchiroli, Chandrapur	0.382	0.159	1.698	0.333
	State as a whole	0.957 (2.96)	0.414	2.436 (4.72)	1.467
	For crossbred & Exotic cow	5.068	3.061	-	-

Note :- Figures in brackets indicate P.S.Es.

TABLE NO. 14

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

No.	Name 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.	Greater Bombay	4.591	3.061	6.456	6.061
2.	Thane, Raigad	0.876	0.421	2.507	1.659
3.	Ratnagiri, Sindhudurg	0.779	0.328	1.362	0.787
4.	Nashik, Dhule, Jalgaon	1.148	0.461	2.635	1.481
5.	Ahmadnagar, Pune	1.223	0.488	2.605	1.494
6.	Satara, Sangli, Kolhapur	1.235	0.595	2.592	1.716
7.	Solapur, Latur, Osmanabad, Beed	1.021	0.489	2.070	1.214
8.	Narangabad, Jalna, Buldana	1.020	0.473	2.452	1.404
9.	Parbhani, Nanded	1.002	0.463	1.554	0.855
10.	Akola, Amravati, Yavatmal	0.874	0.346	2.468	1.281
11.	Wardha, Nagpur, Bhandara	0.710	0.256	2.579	1.357
12.	Gadchiroli, Chandrapur	0.506	0.211	1.840	0.902
	State as a whole	0.970 (5.74)	0.413	2.534 (5.65)	1.517
	For crossbred & exotic cow	4.893	2.897	-	-

(Note :- Figures in bracket indicate percentage standard error)

TABLE NO. 15

Average daily milk yield per animal in milk and per milch animal
for winter season

Group No.	Name of the Dists.	Per day average milk yield (in Kg.)			
		Indigenous cow		Buffaloes	
		In-milk	Milch	In-milk	Milch
1	2	3	4	5	6
1.	Greater Bombay	5.094	3.396	6.675	6.266
2.	Thane, Raigad	0.537	0.242	2.796	1.864
3.	Ratnagiri, Sindhudurg	0.516	0.223	1.037	0.600
4.	Nashik, Dhule, Jalgaon	1.326	0.565	2.621	1.504
5.	Ahmadnagar, Pune	1.139	0.470	2.661	1.750
6.	Satara, Sangli, Kolhapur	1.158	0.563	2.750	1.833
7.	Solapur, Latur, Beed, Ceamanabad	1.205	0.623	2.424	1.496
8.	Aurangabad, Jalna, Buldhana	1.054	0.504	2.732	1.564
9.	Parbhani, Nanded	1.081	0.475	1.893	1.038
10.	Akola, Amravati, Yavatmal	0.963	0.388	2.520	1.367
11.	Wardha, Nagpur, Bhandara	0.585	0.211	2.561	1.409
12.	Gadchiroli, Chandrapur	0.492	0.205	1.862	0.984
State as a whole		0.984 (2.49)	0.427 -	2.673 (2.31)	1.649 -
Crossbred and Exotic Cow		5.069	3.061	-	-

(Note :- Figures in brackets indicate Percentage Standard Errors)

The overall average milk yield per animal for the year is worked out and is presented in table No. 16 below :

TABLE NO. 16

Average daily milk yield per animal in milk and per milch animal (overall)

Group No.	Name of the Dists.	Per day average milk yield (in Kg.)			
		Indigenous cow		Buffalo	
		In-milk	Milch	In-milk	Milch
1	2	3	4	5	6
1.	Greater Bombay	4.943	3.295	6.144	5.768
2.	Thane, Raigad	0.696	0.325	2.665	1.790
3.	Ratnagiri, Sindhudurg	0.553	0.237	1.105	0.639
4.	Nashik, Dhule, Jalgaon	1.200	0.499	2.561	1.439
5.	Ahmadnagar, Pune	1.127	0.453	2.527	1.537
6.	Satara, Sangli, Kolhapur	1.146	0.558	2.640	1.743
7.	Solapur, Latur, Osmanabad, Beed	1.229	0.620	2.283	1.368
8.	Aurangabad, Jalna, Buldhana	1.004	0.471	2.476	1.400
9.	Parbhani, Nanded	1.034	0.470	1.634	0.903
10.	Akola, Amravati, Yavatmal	0.917	0.364	2.395	1.281
11.	Wardha, Nagpur, Bhandara	0.682	0.246	2.655	1.428
12.	Gadchiroli, Chandrapur	0.461	0.193	1.800	0.900
State as a whole		0.970 (2.31)	0.418	2.548 (2.51)	1.544
Crossbred and exotic cows		5.010	3.006	-	-

(Note :- Figures in brackets indicate P.S.Es.)

It is seen from the table No. 16, that the overall average milk yield per day/indigenous cow in-milk was 0.970 Kg. and that for exotic/crossbred cow in-milk was 5.010 Kg. In case of buffalo the same was 2.548 Kg.

3.4 MILK PRODUCTION :- The estimates of milk production for each group of districts for the three seasons and also for (*) separately and are shown in Table No. 17,18,19 and 20.

TABLE NO. 17

Estimates milk production for summer season

Group No.	Name of the Dists.	Milk production (in '000 M.T.)	
		Indigenous cow milk	Buffalo milk
1	2	3	4
1.	Greater Bombay	1.162	30.066
2.	Thane, Raigad	10.199	28.480
3.	Ratnagiri, Sindhudurg	3.367	3.956
4.	Nashik, Dhule Jalgaon	37.478	46.094
5.	Ahmadnagar, Pune	24.694	33.742
6.	Satara, Sangli, Kolhapur	16.017	120.349
7.	Solapur, Latur, Osmanabad, Beed	46.555	48.556
8.	Aurangabad, Jalna, Buldhana	21.736	18.151
9.	Parbhani, Nanded	24.100	15.581
10.	Akola, Amravati, Yavatmal	28.274	27.225
11.	Wardha, Nagpur, Bhandara	18.248	22.433
12.	Gadchiroli, Chandrapur	6.388	5.401
State total		238.218 (6.05)	400.034 (5.89)
For exotic and crossbred cows.		111.334	-

(Note :- Figures in brackets indicate percentage standard errors)

(*) the entire year have been worked out for cows and buffaloes

TABLE NO.16

Estimated milk production for Rainy Season

Group No.	Name of the Districts.	Milk production (in '000 M.T.)	
		Indigenous cow	Buffalo
1	2	3	4
1.	Greater Bombay	1.044	36.882
2.	Thane, Raigad	13.655	27.148
3.	Ratnagiri, Sindhudurg	7.983	6.253
4.	Nashik, Dhule, Jalgaon	38.433	52.796
5.	Ahmednagar, Pune	29.504	36.119
6.	Satara, Sangli, Kolhapur	19.829	118.738
7.	Solapur, Latur, Osmanabad, Beed	31.339	41.561
8.	Aurangabad, Jalna, Buldhana	23.955	21.442
9.	Parbhani, Nanded	23.972	16.856
10.	Akola, Amravati, Yavatmal	26,900	28.794
11.	Wardha, Nagpur, Bhandara	17,248	19.010
12.	Gadchiroli, Chandrapur	8.706	5.747
State Total		242.568 (8.70)	411.346 (6.32)
Cross-bred cows		106.641	-

(Note : Figures in brackets indicate the percentage Standard Errors.)

TABLE NO. 19

Estimated Milk Production for Winter Season

Group No.	Name of the Districts	Milk Production (in '000 MT)	
		Indigenous Cow	Buffalo
1	2	3	4
1)	Greater Bombay	11.130	37.203
2)	Thane, Raigad	7.888	29.574
3)	Ratnagiri, Sindhudurg	4.916	4.596
4)	Nashik, Dhule, Jalgaon	43.620	53.715
5)	Ahmednagar, Pune	27.851	39.128
6)	Satara, Sangli, Kolhapur	17.615	128.213
7)	Solapur, Latur, Beed, Osmanabad	39.030	50.580
8)	Aurangabad, Jalna, Buldhana	24.465	23.233
9)	Parbhani, Nanded	24.958	20.709
10)	Akola, Amravati, Yavatmal	30.276	30.998
11)	Wardha, Nagpur, Bhandara	14.128	20.188
12)	Gadchiroli, Chandrapur	8.397	6.199
State Total		244.274 (6.06)	444.336 (4.60)
Crossbred cows		111.263	-

(Note : Figures in brackets indicate percentage standard errors)

TABLE NO. 20

Estimated milk production for the year (overall)

Group No.	Name of the Districts	Milk Production (in '000' M.T.)		
		Indigenous cow	Buffalo	Total
1	2	3	4	5
1.	Greater Bombay	3.336	104.151	107.487
2.	Thane, Raigad	31.743	85.201	116.944
3.	Ratnagiri, Sindhudurg	16.266	14.805	31.071
4.	Nashik, Dhule, Jalgaon	119.531	152.605	272.136
5.	Ahmednagar, Pune	82.049	108.989	191.038
6.	Satara, Sangli, Kolhapur	53.460	367.299	420.759
7.	Solapur, Latur, Beed, Osmanabad	116.924	140.697	257.621
8.	A'bad, Jalna, Buldha na	70.156	62.827	132.983

1	2	3	4	5
9. Parbhani, Nanded		73.030	53.146	126.17
10. Akola, Amravati, Yavatmal		85.450	87.018	172.46
11. Wardha, Nagpur, Bhandara		49.624	61.631	111.25
12. Gadchiroli, Chandrapur		23.491	17.346	40.83
State Total		725.060 (4.06)	1255.715 (3.23)	1980.77
Crossbred Cow		329.238	-	-
Overall for Deshi + CB Cows		1054.298	-	-
Overall for Cow + Buffaloes		1054.298	1255.715	2310.013

(Note :- Figures in brackets indicate percentage standard error)

It is seen from the Table No. 20 that the total milk production from bovines for the State, during the year was estimated as 2310.013 thousand tonnes. Of this, the contribution from cows was about 46 percent, remaining 54 percent was from buffalo class. Per capita availability of milk during the year was found to be 91 Gms.

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 the Summer, Rainy and Winter seasons are given in the table No. 21 for indigenous cows. As the group averages are not worked out for C.B. 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 1986-87 (Milk yield in Kg. Milk Production in '000 M.T.)

Sr. No.	Group of Dists.	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	5.150	1.162	4.591	1.044	5.094	1.130
2.	Thane, Raigad	0.666	10.199	0.876	13.655	0.537	7.888

1	2	3	4	5	6	7	8
3.	Ratnagiri, Sindhudurg	0.350	3.367	0.779	7.983	0.516	4.916
4.	Nashik, Dhule, Jalgaon	1.127	37.478	1.148	38.433	1.326	43.620
5.	A'nagar, Pune	1.021	24.694	1.223	29.504	1.139	27.851
6.	Satara, Sangli, Kolhapur	1.041	16.017	1.235	19.829	1.158	17.615
7.	Solapur, Latur, Osmanabaf, Beed	1.452	46.355	1.021	31.339	1.209	39.030
8.	A'bad, Jalna, Buldhana	0.938	21.736	1.020	23.955	1.054	24.465
9.	Parbhani, Nanded	1.020	24.100	1.002	23.972	1.081	24.958
10.	Akola, Amravati Yavatmal.	0.913	28.274	0.874	26.900	0.963	30.276
11.	Wardha, Nagpur Bhandara	0.752	18.248	0.710	17.248	0.585	14.128
12.	Gadchiroli, Chandrapur	0.382	6.388	0.506	8.706	0.492	8.397
State Total		0.957	238.218	0.970	242.568	0.984	244.274
C.B. Cows State Total		5.068	111.334	4.893	106.641	5.069	111.263

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 the summer season and maximum in winter season. In the case of C.B. cows there is little seasonal variation, the average milk yield and total milk production being minimum during winter season As the C.B. Cows are generally reared by cultivators having irrigation facilities the green fodder is available through out the year and here the seasonal variation is not observed in average milk yield and total milk production.

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 1986-87 (Average milk yield in Kg. Milk production in '000 M.T.).

Sr. No.	Group of 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	5.306	30.066	6.456	36.882	6.675	37.203
2.	Thane, Raigad	2.696	20.480	2.507	27.148	2.796	29.574
3.	Ratnagiri, Sindhudurg	0.904	3.956	1.362	6.253	1.037	4.596
4.	Nashik, Dhule, Jalgaon	2.374	46.094	2.685	52.796	2.621	53.715
5.	A'nagar, Pune	2.319	33.742	2.605	36.119	2.661	39.128
6.	Satara, Sangli, Kolhapur	2.579	120.349	2.592	118.738	2.750	128.213
7.	Solapur, Latur, Osmanabad, Beed	2.350	48.556	2.070	41.561	2.424	50.580
8.	AiBad, Jalna, Buldhana	2.234	18.151	2.452	21.442	2.732	23.233
9.	Parbhani, Nanded	1.451	15.581	1.554	16.856	1.893	20.709
10.	Akola, Amravati, Yavatmal	2.204	27.225	2.468	28.794	2.520	30.998
11.	Wardha, Nagpur, Bhandara	2.820	22.433	2.579	19.010	2.561	20.188
12.	Gadchiroli, Chandrapur	1.693	5.401	1.840	5.747	1.862	6.199
State Total		2.436	400.034	2.534	411.346	2.673	444.336

The above table indicates that in the case of buffaloes class the minimum daily average milk yield and total milk production is observed in Summer Season and the same is increased by 4.0, 2.8 and 9.7 and 11.1 percent during the rainy and winter season respectively.

ut the average per day milk yield and total milk production for the years 1984-85, 1985-86 and 1986-87 for cattle and buffalo class is given in table No. 23. As the average milk yield per day and total milk production for C.B. cattle is being worked out since 1985-86 the C.B. cows data for the year 1984-85 has been included in the data of indigenous cows.

It is observed from the table that the total milk production during 1984-85, 1985-86 and 1986-87 for cattle class was 890, 1059 and 1054 thousand M.T. respectively. The increase in milk production was less mainly due to scarcity and semi scarcity conditions in the State.

TABLE NO. 23

Statement showing comparative data about average milk yield per day per animal and total milk production for the years 1984-85, 1985-86 and 1986-87

Sr. No.	Group of Districts	1984-85		1985-86			
		Indig. + C.B. cows	Buffaloe	Other than C.B. cows	Total		
		Average milk yield per animal Inmilk (Kg.)	Total milk production ('000 MT)	Average milk yield per animal Inmilk (Kg.)	Total milk production ('000 MT)		
1	2	3	4	5	6	7	
1.	Gr. Bombay	5.273	4.103	6.578	111.513	4.609	3.110
2.	Thane, Raigad	0.786	31.529	2.026	50.319	0.815	36.986
3.	Ratnagiri Sindhudurg	0.688	16.481	1.100	14.255	0.629	18.173
4.	Nashik, Dhule Jalgaon	1.259	129.323	2.467	151.069	1.167	117.130
5.	A' Nagar, Pune	1.476	123.626	2.221	98.488	1.025	75.447
6.	Satara, Sangli, Kolhapur	2.634	155.055	2.793	386.242	1.222	56.296
7.	Solapur, Latur, D'bad, Beed	1.472	132.620	2.741	200.252	1.289	126.091
8.	A'bad, Jalna, Buldana	1.055	69.644	2.490	65.323	1.036	72.139
9.	Parbhani Nanded	0.935	80.753	1.606	55.747	1.031	73.063
10.	Akola, A'vati, Yavatmal	0.845	72.529	2.444	94.788	0.783	73.371
11.	Wardha, Nagpur Bhandara	0.709	54.067	2.873	69.567	0.671	48.507
12.	Gadchiroli, Chandrapur	0.543	20,727	1.836	18.840	0.518	26.389
	State Total	1.183 (3.3)	890.457 (4.4)	2.602 (2.5)	1316.403 (3.1)	0.968 (1.58)	725.702 (3.92)
	C.B. Cows	(*)	(*)			5.170	332.824

(*) - included in indigenous cows

Sr. No.	Group of District	1985-86		1986-87			
		Buffalo		Other than C.B. cows		Buffalo	
1	2	Average milk yield per animal in milk (Kg.)	Total milk production (000 MT)	Average milk yield per animal in milk (Kg.)	Total milk production (000 MT)	Average milk yield per animal in milk (Kg.)	Total milk production (000 MT)
9	10	11	12	13	14		
1.	Gr. Bombay	6.183	104.813	4.943	3.336	6.144	104.151
2.	Thane, Raigad	2.856	92.333	0.696	31.743	2.665	85.201
3.	Ratnagiri, Sindhudurg	1.161	15.513	0.554	16.266	1.105	14.805
4.	Nashik, Dhule, Jalgaon	2.338	144.586	1.200	119.531	2.561	152.605
5.	A'nagar, Pune	1.931	86.020	1.127	82.049	2.527	103.939
6.	Satara, Sangli, Kolhapur	2.484	355.861	1.146	53.460	2.640	367.299
7.	Solapur, Latur, O'bad, Beed	2.492	157.886	1.229	116.924	2.283	140.697
8.	A'bad, Jalns, Buldhana.	2.564	65.671	1.004	70.156	2.476	62.827
9.	Parbhani, Nanded	1.706	58.129	1.034	73.030	1.634	53.146
10.	Akola, Amravati, Yavatmal	2.398	90.571	0.917	85.450	2.395	87.013
11.	Wardha, Nagpur, Bhandara	2.806	68.283	0.682	49.624	2.665	61.631
12.	Gadchiroli, Chandrapur	1.735	17.917	0.461	23.491	1.800	17.341
State Total		2.482 (1.78)	1257.583 (3.65)	0.970 (2.31)	725.060 (4.06)	2.543 (2.51)	1255.715 (3.23)
C.B. Cows		-	-	5.010	329.238	-	-

(Note :- Figures in Brackets indicate percentage standard Errors).

3.5 Availability of milk in bovine keeper households.

The information regarding availability of milk was collected for the previous day of visit from 10,820 bovine keeper households. The details about production and purchase of milk are given in table No. 24 for cow milk and buffalo milk seperately.

TABLE NO. 24

Availability of milk in bovine keeper households

Category	Producing milk % of Average house Qty. holds of milk per house hold (Kg.)	Purchasing milk % of Average house Qty. holds of milk per house hold (Kg.)	Total milk Produced+Purchased % of Average Qty. house of milk per household (Kg.)			
1	2	3	4	5	6	7
a) Only cow milk	61.1	1.583	56.7	0.344	60.6	1.426
b) Only Buff. milk	34.8	2.701	43.3	0.265	35.9	2.305
c) Both cow & Buff. Milk	4.1	2.002	-	-	3.5	2.002
Cow milk		1.604		0.344		1.457
Total	100.0		100.0		100.0	
Buff. Milk		2.709		0.265		2.347
Overall availability per day-						
Cow milk	-	0.903	-	0.026	-	0.934
Buff. Milk	-	0.911	-	0.015	-	0.926
Total	-	1.819	-	0.041	-	1.860

It was observed that on an average a bovine keeper household produced 903 Gm. of cow milk and 911 Gm. of buffalo milk, whereas the quantity purchased was 26 Gm. of cow milk and 15 Gm. of Buff. /_ The producer households are classified as 61 % households producing cow milk about 35 percent producing buffalo milk while 4 percent households producing cow milk as well as buffalo milk. /_ 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	Percent of milk				
	Consumed as fluid milk	Sold as fluid milk	Converted to milk products	Balance	
1	2	3	4	5	
Only cow milk	45	52	2	1	
Only buffalo milk	27	71	1	1	
Both	Cow milk	31	65	3	1
	Buffalo milk	22	71	6	1
Overall	Cow milk	44	53	2	1
	Buff. Milk	26	71	2	1

The households producing only cow milk, consumed 45 percent milk and sold 52 percent milk, whereas those producing only Buffalo milk consumed 27 percent and sold 71 percent of the milk. On an average 44 percent of cow milk was utilised at home and 53 percent was sold out. The same was 26 percent and 71 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 yield.

Sr. No.	Category	Daily milk yield (Gm.)						Total	
		0 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
1)	Cow	4.1	28.1	27.2	25.5	6.3	4.1	4.2	100.0
2)	Buffaloes	-	3.3	8.7	25.4	26.4	28.7	7.0	100.0

About 55 percent cows were found to have yield upto 1000 Gms. while about 87 percent buffaloes were producing milk above 1000 Gms

Utilisation of milk in non-bovine keeper households :

Data regarding utilisation of milk were collected from 5320 non-bovine keeper households. Of these households 19.6 percent households were found to be not utilising milk at all.

It was observed that on an average, the non-bovine keeper household purchased 251 Gm. of cow milk and 230 Gm. of Buff. milk.

3.9 Feeding practices :

Data on 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) Young stock upto 3 years. The types of feed and fodder fed were green fodder, dry fodder and concentrates.

During the year under report, data were collected from 10,320 households having 38,599 cattle and 10,253 buffaloes. While collecting the data on feeding, information on whether the animals were only grazed, only stalled or both, was also collected. The seasonwise 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
In-milk	2,851	3,319	2,754	8,924	1,752	1,668	1,606	5,026
Dry + Not calved even once	2,296	2,654	1,957	6,907	664	903	712	2,284
Adult males	4,851	5,473	3,960	14,284	192	246	103	54
Youngstock upto 3 Yrs.	2,967	3,218	2,299	8,484	636	914	847	2,397
Total	12,965	14,664	10,970	33,599	3,244	3,736	3,273	10,253

3.10 Distribution of animals according to those only grazed, only stalled and both

The details about the feeding practices of the bovine are given in Table No. 23.

It was observed that about 12 percent cattle were only grazed while 8 percent were only stalled. In respect of buffaloes about 6 percent animals were grazed only, and 3 percent were stalled only. The percentage of only stalled animals was more in youngstock category.

TABLE NO. 20

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			Rainly		
	G	S	G + S	G	S	G + S
1	2	3	4	5	6	7
CATTLE						
1. In-milk	2.8	4.4	92.8	7.5	7.7	84.8
2. Dry + N.C.	14.4	1.1	84.5	34.8	1.1	64.1
3. Adult males	1.9	1.3	96.8	16.3	6.5	77.2
4. Youngstock upto 3 years	10.7	13.3	76.0	29.6	21.2	49.2
Overall	6.3	4.7	89.0	20.6	9.0	70.4
BUFFALOES						
1. In-milk	0.6	2.8	96.6	1.1	3.3	95.6
2. Dry + N.C.	5.1	1.0	93.9	19.3	4.1	76.6
3. Adult males	0.6	1.9	97.5	22.0	-	78.0
4. Youngstock upto 3 years	3.4	17.4	79.2	7.5	16.7	75.8
Overall	2.1	5.5	92.4	9.0	6.8	84.02
Category of animals	Winter			Overall		
1	2	3	4	5	6	7
CATTLE						
1. In-milk	1.3	9.5	89.2	4.2	7.1	88.7
2. Dry + N.C.	14.2	8.9	76.9	22.2	3.3	74.5
3. Adult males	2.2	11.3	86.5	17.5	6.1	86.4
4. Youngstock upto 3 years	9.2	19.0	71.8	17.5	17.8	64.7
Overall	5.7	12.1	82.2	11.6	8.4	80.0
BUFFALOES						
1. In-milk	-	1.1	98.9	0.6	4.8	94.6
2. Dry + N.C.	13.0	4.0	73.0	14.3	3.2	82.0
3. Adult males	46.7	-	53.3	19.3	0.7	80.0
4. Youngstock upto 3 years	17.3	27.5	55.2	9.9	20.7	69.4
Overall	11.2	12.8	76.0	7.5	8.2	84.3

3.11 Average quantity of feed/fodder fed per day per animal.

The data was collected about the feed/fodder fed to various categories of bovine in the selected bovine rearing h-hds. The seasonwise details of average quantity of feed fed per animal per day are presented in Table No. 29. These averages are based on all the animals observed, including th kept on grazing alone also.

TABLE NO. 29

Seasonwise average quantity of feed/fodder fed per bovine

Season	Type of feed	Average feed fed per day per animal								
		Cattle				Buffalo				
		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	
<u>Summer</u>	Green	0.392	0.566	0.340	0.297	0.521	0.316	0.044	0.219	
	Dry	0.345	5.842	0.113	3.694	11.062	7.140	7.287	3.357	
	Concentrate	0.285	0.045	0.153	0.001	1.179	0.116	0.156	0.006	
<u>Rainy</u>	Green	7.620	3.193	5.357	2.104	10.337	5.123	3.503	2.324	
	Dry	2.785	1.711	3.072	0.863	2.719	1.970	1.941	1.054	
	Concentrate	0.301	0.005	0.055	0.024	1.190	0.069	0.037	0.001	
<u>Winter</u>	Green	1.915	1.022	1.157	0.675	2.292	1.774	1.011	1.290	
	Dry	7.841	6.684	9.616	3.045	9.033	5.299	3.823	2.065	
	Concentrate	0.359	0.029	0.040	0.018	1.034	0.206	0.056	0.001	
<u>Overall</u>	Green	3.751	1.707	2.659	1.085	4.430	2.631	1.630	1.591	
	Dry	6.082	4.493	6.593	2.444	7.532	4.515	4.195	2.056	
	Concentrate	0.313	0.025	0.084	0.015	1.154	0.126	0.002	0.002	

It is seen from the table No. 29 that maximum quantity of dry fodder is fed to adult males in cattl class, whereas more quantity of concentrates is fed to in-milk cows. In buffalo class, the highest quantity of fed/fodder is fed to the in-milk buffaloes as compared to any other category.

3.12 Distribution of bovines 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, as presented in Table No. 30. Here, those considered and the averages are based on all the three seasons together of the year.

∟ animals which received some feeding at home are only /-..30

TABLE NO. 30

Distribution of bovines 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.)					Overall
	In-milk	Dry + N.C.	Adult males	Young stock		
1	2	3	4	5	6	
A) CATTLE						
i) Green	9.6 (40.6)	6.6 (33.1)	8.6 (33.6)	3.5 (38.0)	7.5 (36.1)	
ii) Dry	8.6 (73.6)	7.7 (74.4)	9.6 (74.6)	4.4 (68.0)	8.0 (73.1)	
iii) Concentrates	1.6 (20.5)	1.2 (2.6)	1.3 (6.9)	1.3 (1.3)	1.5 (8.4)	
B) BUFFALOES						
i) Green	11.5 (32.9)	8.4 (37.4)	6.1 (37.1)	3.9 (45.4)	8.4 (40.1)	
ii) Dry	10.2 (74.5)	7.6 (70.1)	7.1 (4.5)	3.5 (1.1)	7.9 (71.0)	
iii) Concentrates	2.0 (58.0)	1.4 (10.3)	1.6 (6.3)	1.1 (0.2)	1.9 (30.4)	

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

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. 31. Here, the dung collected in the stalls is only considered.

1) BUFFALOES	(30.5)	(2.5)	(3.5)	(1.3)	(1.3)	(1.3)
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TABLE NO. 31

Utilisation of dung collected from bovines at stalls

Sr. No.	Season	Average Qty. of dung collected per day bovine (Kg.)	Estimated annual Qty. of dung collected (1000 MT)	Utilisation of dung (%)			Total
				For man-ure	For dung cakes	Other purposes	
1	2	3	4	5	6	7	8
1.	Summer	3,409 (16066)	-	70.6	22.0	7.4	100.0
2.	Rainy	3,597 (16597)	-	82.9	8.2	8.9	100.0
3.	Winter	3,385 (13631)	-	67.8	25.0	7.2	100.0
Overall		3,409 (46294)	26321.454	74.4	17.7	7.9	100.0

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

The average quantity of dung collected in stalls was about 3.5 Kg. per animal per day. The average quantity collected was maximum in rainy 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 26321.5 thousand metric tonnes.

3.14 Mortality in bovines :

The mortality observed during the year in various categories of cattle and buffaloes is presented in Table No. 32.

TABLE NO. 32

Percentage of mortality in bovines

Sr. No.	Category	Annual mortality rate in	
		Cattle	Buffaloes
1	2	3	4
1.	In-milk	1.7	1.3
2.	Dry and not calved even once	2.3	2.7
3.	Adult males	1.3	5.3
4.	Youngstock	1.9	5.5
Overall		1.7	3.4

It is seen from the table that the annual mortality observed in cattle class was 1.7 percent as against 3.4 percent in buffaloes. The maximum mortality percentage was observed in youngstock of both the categories, especially in buffaloes.

CHAPTER - 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. 33

Number of villages and poultry birds observed

Sr. No.	Season	No. of villages observed	No. of household observed	Number of poultry birds observed					Total
				Cocks	Hens	Cocke -rels	Pulle -ts	Chicks	
1	2	3	4	5	6	7	8	9	10
1.	Summer	205	7,494	3,955	20,156	3,261	4,943	15,169	47,480
2.	Rainy	200	7,250	3,115	20,595	2,913	4,556	19,277	50,454
3.	Winter	185	6,551	3,672	24,377	2,967	4,393	15,909	51,408
Total		590	21,303	10,742	65,128	9,141	13,897	50,435	1,49,343

During the year, data about egg-production were collected for 65,128 layers and data on raring practices followed were collected for 1,49,343 poultry birds from 21,303 poultry keeper households.

4.2 Average number of poultry birds per 100 poultry keeper household

The average number of poultry birds reared per 100 poultry keeper households, on the day of visit is persented in table No. 34

TABLE NO. 34

Average number of poultry birds reared per 100 poultry keeper households

Sr. No.	Season	No. of birds per 100 poultry keeper households					
		Cocks	Hens	Cockerels	Pullets	Chicks	Total
1	2	3	4	5	6	7	8
1.	Summer	53 (8)	269 (43)	44 (7)	66 (10)	202 (32)	634 (100)
2.	Rainy	43 (6)	284 (41)	40 (6)	63 (9)	266 (33)	696 (100)
3.	Winter	56 (7)	372 (47)	45 (6)	67 (9)	244 (31)	784 (100)
	Overall	50 (7)	306 (44)	43 (6)	65 (9)	237 (34)	701 (100)

(Note :- Figures in brackets indicate percentage to total poultry)

The average number of poultry birds reared per 100 poultry keeper households was maximum (784) during winter season, while it was minimum in summer season (i.e. 634). On an average there were 701 birds per 100 poultry keeper households consisting of 50 cocks, 306 hens, 43 cockerels, 65 pullets and 237 chicks. The overall composition of poultry stock reared per 100 poultry keeper households was observed to be 7 percent cocks, 44 percent hens, 6 percent cockerels, 9 percent pullets and 34 percent chicks.

4.3 Estimated number of layers, laying percentage & 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 Table no. 35, 36, 37 and 38.

be 7 percent cocks, 44 percent hens, 6 percent cockerels

TABLE NO. 35

Estimated egg production from Deshi layers during Summer Season

Sr. No.	Group of dists.	Estimated No. of layers (in lakhs)	Laying percentage	Total egg Production (lakhs)
1	2	3	4	5
1.	Gr. Bombay	0.70	30.53	25.99
2.	Thane, Raigad	6.99	27.14	231.46
3.	Ratnagiri, Sindhudurg	6.55	26.42	211.21
4.	Nashik, Dhule, Jalgaon	6.33	33.49	260.67
5.	Ahmadnagar, Pune	14.72	32.78	588.62
6.	Satara, Sangli, Kolhapur	15.70	31.39	601.34
7.	Solapur, Latur, O'bad, Beed	8.68	29.15	308.64
8.	A'bad, Jalna, Buldhana	2.68	32.39	105.97
9.	Parbhani, Nanded	2.00	31.56	77.04
10.	Akola, Amravati, Yavatmal	4.34	29.07	153.74
11.	Wardha, Nagpur, Bhandara	3.68	30.93	138.76
12.	Gadchiroli, Chandrapur	3.37	29.12	119.81
State as a whole		75.79 (7.00)	30.53 (4.62)	2823.23 (7.79)

Note :- Figures in brackets indicate percentage standard errors.

TABLE NO. 36

Estimated egg production from Deshi layers during Rainy Season

Gr. No.	Group of dists.	Estimated No. of layers (lakhs)	Laying percentage	Total egg Production (lakhs)
1	2	3	4	5
1.	Gr. Bombay	0.70	31.59	27.11
2.	Thane, Raigad	6.88	29.10	246.15
3.	Ratnagiri, Sindhudurg	6.62	29.91	243.56
4.	Nashik, Dhule, Jalgaon	6.24	33.66	258.43
5.	Ahmadnagar, Pune	14.51	33.57	599.36
6.	Satara, Sangli, Kolhapur	15.08	30.51	565.63
7.	Solapur, Latur, O'bad, Beed	8.79	32.57	351.95
8.	A'bad, Jalna, Buldhana	2.65	32.98	107.39
9.	Parbhani, Nanded	2.06	30.57	77.52
10.	Akola, Amravati, Yavatmal	4.27	33.18	174.45
11.	Wardha, Nagpur, Bhandara	3.76	28.66	132.41
12.	Gadchiroli, Chandrapur	3.30	30.68	124.71
State as a whole		74.86	31.59	2908.67

Note :- Figures in brackets indicate percentage standard errors.

TABLE NO. 37

Estimated egg production from Deshi layers during Winter Season

Sr. No.	Group of districts	Estimated No. of layers (lakh)	Laying percentage	Total egg production (Lakh)
1	2	3	4	5
1.	Greater Bombay	0.70	33.06	27.68
2.	Thane, Raigad	7.00	30.96	259.95
3.	Ratnagiri, Sindhudurg	6.59	28.33	223.91
4.	Nashik, Dhule, Jalgaon	6.49	36.24	282.35
5.	Ahmednagar, Pune	15.28	34.39	630.61
6.	Satara, Sangli, Kolhapur	15.82	34.40	653.13
7.	Solapur, Latur, Osmanabad, Beed	8.67	32.00	333.11
8.	Aurangabad, Jalna, Buldhana	2.50	31.76	98.16
9.	Parbhani, Nanded	1.90	34.27	78.03
10.	Akola, Amravati, Yavatmal	4.54	34.58	188.33
11.	Wardha, Nagpur, Bhandara	3.69	31.64	140.25
12.	Gadchiroli, Chandrapur	3.37	30.73	124.35
State as a whole		76.63 (4.51)	33.06 (3.02)	3039.86 (4.87)

(Note :- Figures in brackets indicate percentage standard errors)

TABLE NO. 30

Estimated total egg production during the year (overall)

Sr. No.	Group of districts	Estimated No. of layers (lakh)	Laying percentage	Total egg production (lakhs)
1	2	3	4	5
<u>FOR DESHI LAYERS</u>				
1.	Gr. Bombay	0.70	31.72	80.79
2.	Thane, Raigad	6.95	29.05	737.55
3.	Ratnagiri, Sindhudurg	6.59	28.23	678.67
4.	Nashik, Dhule, Jalgaon	6.37	34.46	801.45
5.	Ahmednagar, Pune	14.84	33.58	1818.58
6.	Satara, Sangli, Kolhapur	15.53	32.10	1820.11
7.	Solapur, Latur, Osmanabd, Beed	8.71	31.25	993.69
8.	Aurangabad, Jalna, Buldhana	2.64	32.39	311.52
9.	Parbhani, Nanded	1.99	32.00	232.59
10.	Akola, Amravati, Yavatmal	4.38	32.29	516.52
11.	Wardha, Nagpur, Bhandara	3.71	30.39	411.42
12.	Gadchiroli, Chandrapur	3.35	30.17	368.87
Overall for deshi layers		75.76 (3.33)	31.72 (3.15)	8771.76 (3.60)
Improved layers		28.24	69.04	7116.48
Overall for deshi + Improved		104.00	41.86	15888.24

(Note :- Figures in brackets indicate percentage standard errors)

The total egg production for the State, during the year was estimated as 15088.24 lakhs. Out of this the contribution from Deshi layers was 55 percent and from that improved layers was 45 percent.

The overall eggs obtained per deshi layers per year were 116 and that from improved layers were 252, per capita per annum availability of eggs was 23 during the year under report.

4.3.1 The estimated egg production in the State during the year 1984-85, 1985-86 and 1986-87 are presented in Table No. 39.

TABLE NO. 39

Estimated egg production in Maharashtra State during 1984-85, 1985-86 and 1986-87

Sr. No.	Group of Dists.	1984-85			1985-86			1986-87		
		Estimated No. of layers (lakhs)	Laying percentage	Egg Production (lakhs)	Estimated No. of layers (lakhs)	Laying percentage	Egg Production (lakhs)	Estimated No. of layers (lakhs)	Laying percentage	Egg Production (lakhs)
1	2	3	4	5	6	7	8	9	10	11
1.	Gr. Bombay	-	-	-	0.74	32.52	83.23	0.70	31.72	80.79
2.	Thane, Raigad	6.23	28.93	658.19	6.80	29.62	735.48	6.95	29.05	737.55
3.	Ratnagiri, Sindhudurg	5.66	33.93	701.14	6.53	29.92	712.69	6.59	28.23	678.67
4.	Nashik, Dhule, Jalgaon	6.57	33.88	812.75	6.48	34.98	826.94	6.37	34.46	801.45
5.	Ahmednagar, Pune	15.45	35.92	2026.04	14.82	33.69	1821.52	14.84	33.58	1818.58
6.	Satara, Sangli, Kolhapur	17.41	31.23	1984.71	16.05	34.03	1993.87	15.53	32.10	1820.11
7.	Solapur, Latur, Beed, Osmanabad	7.38	32.55	876.67	8.67	31.57	999.51	8.71	31.25	993.69
8.	Ahmednagar, Jalna, Buldana	2.48	32.31	291.97	2.61	33.03	314.55	2.64	32.39	311.52
9.	Parbhani, Nanded	1.70	32.22	200.00	2.03	31.17	230.08	1.99	32.08	232.59
10.	Akola, Amravati, Yavatmal	4.40	29.06	466.23	4.44	31.69	513.79	4.38	32.29	516.52
11.	Wardha, Nagpur, Bhandara	3.76	31.99	438.80	3.72	31.08	422.04	3.71	30.39	411.42
12.	Chandrapur, Gadchiroli	2.82	33.26	342.25	3.34	32.19	392.63	3.35	30.17	368.87
	Overall-Deshi layers	73.86	32.64	8798.75	76.23	32.53	9051.33	75.76	31.72	8771.76
	Improved layers	21.58	69.59	5481.32	24.00	68.90	6036.00	28.24	69.04	7116.48
	Deshi+improved layers	95.44	40.99	14280.07	100.23	41.24	15087.33	104.00	41.86	15888.24

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 58.9 percent were disposed off at home for table purpose; while 9.3 percent were kept for hatching. About 23 percent eggs were sold out for table purpose and 0.2 percent for hatching purpose. It is noticed that there was 3.6 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 household were collected and the same is presented in table No. 40.

TABLE NO. 40

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

Sr. No.	Category of bird	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	9.6	1.4	4.4	0.4	3.0	18.8
2.	Hens	6.2	0.3	1.1	0.1	0.9	8.6
3.	Cockerels	6.7	0.3	4.6	4.4	1.5	17.5
4.	Pullets	4.7	0.1	3.7	2.0	2.1	12.6
5.	Chicks	10.8	1.5	8.5	6.2	4.9	31.9
	Overall	18.1 (42.1)	0.8 (4.2)	4.7 (24.3)	2.9 (15.1)	2.8 (14.3)	19.3 (100.0)

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

It is observed that maximum deaths of occurred due to diseases (42) percent, followed by attack of animals (24 p.c.) The deaths due to physical or mechanical forces such as excess of heat or cold, etc. and due to attack of birds were 4.2 % and 15.1 percent respectively.

The annual mortality in poultry birds was observed to be 24 percent, being maximum in chicks (about 39 percent) and minimum in hens (about 9 percent).

The disease-wise mortality classification in poultry is presented in Table No. 41.

TABLE NO. 41

Percentage distribution of Deshi poultry birds died due to various diseases

Sr. No.	Category of birds	Percentage of deaths due to				Total
		Ranikhet	Diarrhoea	Fowlspox	Undignosed diseases	
1	2	3	4	5	6	7
1.	Cocks	4.6	3.5	0.4	0.4	8.9
2.	Hens	11.0	16.6	0.7	1.1	29.4
3.	Cockerels	1.9	2.5	0.2	0.6	5.2
4.	Pullets	1.7	3.0	0.3	0.3	5.3
5.	Chicks	19.1	23.7	2.3	6.1	51.2
Total		38.3	49.3	3.9	8.5	100.0

Amongst the birds which died due to diseases, 38 percent died due to Ranikhet, 49 percent died due to Diarrhoea and 4 percent died due to Fowl-pox. Remaining 9 percent birds died due to other undignosed 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 were mainly collected for deshi birds only. Very few households in the villages used readymade poultry feed. Table no. 42 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. 42

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	51.3	51.5	16
2.	Rice	26.7	20.7	23
3.	Bajra	5.8	5.4	19
4.	Wheat	0.1	0.1	19
5.	Mash	0.1	0.4	106
6.	Mixed cereals	15.9	21.8	12
7.	Others	0.1	0.1	7
Overall		100.0	100.0	17

It was observed that the major constituents of the feed to poultry birds, were Jawar either alone or in combination followed by Rice. The overall average quantity of feed fed per bird per day was 17 Gms.

CHAPTER - V

WOOL PRODUCTION, GOAT MILK PRODUCTION AND MEAT PRODUCTION

5.1 WOOL PRODUCTION :

From the data collected in the survey, it was observed that sheep were reared in 0.8 percent households and there were 10.3 % villages having sheep.

Distribution of villages according to Sheep Population.

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

TABLE NO. 43

Distribution of villages according to sheep population

Sr.No.	Number of Sheep	Percentage of villages
1	2	3
1.	Upto 10	2.0
2.	11 to 20	1.0
3.	21 to 50	13.3
4.	51 to 100	19.4
5.	101 to 200	15.3
6.	201 to 400	20.6
7.	401 to 600	6.1
8.	601 to 800	6.1
9.	801 to 1000	4.1
10.	Above 1000	4.1
	Total	100.0 (103)

(Note : Figure in bracket indicates number of villages)

It was observed that 3 percent of the villages were having sheep upto 20, while about 33 percent were having 21 to 100 sheep per village.

5.2 Number of sheep observed :

A total of 4675 sheep from 127 flocks were observed for sheep rearing practices. The details are given in Table No. 44.

TABLE NO. 44

Number of sheep observed

Sr. No.	Type of flock	No. of flocks	Rams	Number of Sheep		Total	
				Ewes	Lambs Male Female		
1	2	3	4	5	6	7	8
1.	Stationary	101	119	2701	237	351	3408 (74.6)
2.	Migratory	26	34	960	72	113	1187 (25.4)
Total		127	153	3749	309	464	4675

(Note :- Figures in brackets indicate percentage to total sheep)

It is observed from the Table No. 44 that about 75 percent sheep were from stationary flocks and remaining 25 percent sheep were 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. 45

TABLE NO. 45

Estimated Wool Production

Sr. No.	Season	Estimated No. of sheep (lakhs)	Estimated No. of sheep shorn (lakh)	Average yield per sheep shorn (Kg.)	Total wool production (M.T.)
1	2	3	4	5	6
<u>1) Rainy</u>					
	Rams + Wethers	2.33	2.26	0.292	66.280
	Ewes	18.17	17.61	0.236	503.509
	Lambs	6.59	3.92	0.180	70.511
	Total	27.09	23.79	0.269	640.300
<u>2) Winter</u>					
	Rams + Wethers	2.36	2.26	0.330	74.670
	Ewes	18.84	18.12	0.316	572.645
	Lambs	6.89	3.74	0.186	69.546
	Total	28.09	24.12	0.297	716.861
<u>Overall</u>					
	Rams + Wethers	2.34	2.27	0.622	140.950
	Ewes	18.51	17.86	0.602	1076.154
	Lambs	6.74	3.83	0.366	140.057
	Total	27.59	23.96	0.566	1357.161

The overall average estimated wool yield per sheep shorn worked out to be 566 Gm. it being 602 Gm. per ~~wk~~ ewe and 622 Gm. per adult male. The estimated wool production for the State during the year was about 1357 metric tons.

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 3.8 %.

5.5 Sample size observed For goat milk production and goat rearing /

Of the total villages selected in 95.6 percent villages goats were observed. A total number of 13,309 of goat keeper households & from these 17,362 goats in-milk were observed for goat milk production. It was observed that the percentage of in-milk goats to milch goats was about 46 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 the State during the three seasons and for the entire year are given in Table No. 46, 47, 48 and 49 respectively.

TABLE NO. 46

Estimated goat milk production for summer season

Sr. No.	Group of Dists.	Estimated No. of in-milk goats (lakhs)	Av. daily milk yield /Goat in-milk (Kg.)	Total milk production (+000 M.T.)
1	2	3	4	5
1.	Gr. Bombay	0.04	0.108	0.057
2.	Thane, Raigad	0.62	0.108	0.818
3.	Ratnagiri, Sindhudurg	0.29	0.108	0.385
4.	Nashik, Dhule, Jalgaon	3.19	0.122	4.747
5.	Ahmednagar, Pune	3.53	0.175	7.639
6.	Satara, Sangli, Kolhapur	2.24	0.226	6.184
7.	Solapur, Latur, Osmanabad, Beed	3.70	0.296	13.349
8.	Aurangabad, Jalna, Buldhana	2.33	0.193	5.492
9.	Parbhani, Nanded	2.00	0.147	3.580
10.	Akola, Amravati, Yavatmal	2.36	0.116	3.337
11.	Wardha, Nagpur, Bhandara	1.90	0.081	1.883
12.	Gadchiroli, Chandrapur	1.11	0.089	1.201
State Total		23.36	0.171	48.672

/ practices

Table No. 47

Estimated goat milk production for rainy season

Gr. 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	0.137	0.073
2.	Thane, Raigad	0.89	0.137	1.496
3.	Ratnagiri, Sindhudurg	0.29	0.137	0.405
4.	Nashik, Dhule, Jalgaon	3.12	0.191	7.329
5.	Ahmednagar, Pune	3.36	0.285	7.659
6.	Satara, Sangli, Kolhapur	2.38	0.216	6.338
7.	Solapur, Latur, Osmanabad, Beed	3.41	0.226	9.468
8.	Aurangabad, Jalna, Buldhana	2.17	0.180	4.797
9.	Parbhani, Nanded	1.89	0.173	4.018
10.	Akola, Amravati, Yavatmal	2.87	0.104	3.663
11.	Wardha, Nagpur, Bhandara	1.81	0.119	2.646
12.	Gadchiroli, Chandrapur	1.12	0.098	1.353
State total		23.35	0.172	49.330

TABLE NO. 48

Estimated goat milk production for Winter season

Gr. No.	Group of dists.	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	0.109	0.057
2.	Thane, Raigad	0.69	0.109	0.896
3.	Ratnagiri, Sindhudurg	0.30	0.109	0.334
4.	Nashik, Dhule, Jalgaon	3.07	0.228	8.392
5.	Ahmednagar, Pune	3.71	0.165	7.351
6.	Satara, Sangli, Kolhapur	2.55	0.209	6.402
7.	Solapur, Latur, Osmanabad, Beed	3.89	0.258	12.045
8.	Aurangabad, Jalna, Buldhana	2.19	0.169	4.444
9.	Parbhani, Nanded	1.43	0.181	3.215
10.	Akola, Amravati, Yavatmal	2.86	0.106	3.642
11.	Wardha, Nagpur, Bhandara	1.82	0.104	2.274
12.	Gadchiroli, Chandrapur	1.09	0.108	1.408
State Total		23.69	0.178	50.510

TABLE NO. 49

Estimated goat milk production for the year (Overall)

Gr. No.	Group of Dists.	Estimated No. of in-milk goats (lakhs)	Average daily milk yield per in-milk goat (Kg.)	Total Goat milk production ('000 M.T.)
1	2	3	4	5
1.	Gr. Bombay	0.04	0.118	0.138
2.	Thane, Raigad	0.73	0.120	3.210
3.	Ratnagiri, Sindhudurg	0.29	0.138	1.253
4.	Nashik, Dhule, Jalgaon	3.13	0.179	20.468
5.	Ahmednagar, Pune	3.55	0.175	22.649
6.	Satara, Sangli, Kolhapur	2.39	0.217	18.923
7.	Solapur, Latur, Osmanabad, Beed	3.66	0.261	34.362
8.	Aurangabad, Jalna, Buldhana	2.23	0.181	14.733
9.	Parbhani, Nanded	1.79	0.166	10.813
10.	Akola, Amravati, Yavatmal	2.70	0.108	10.647
11.	Wardha, Nagpur, Bhandara	1.85	0.101	6.802
12.	Gadchiroli, Chandrapur	1.11	0.098	3.963
State Total		23.47	0.173	143.511

It is observed from Table No. 49 that total goat milk production for the state was estimated as 143.511 thousand metric tonnes during the year. The average milk yielded per goat in-milk per day was 173 Gm.

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 4.9 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. 50.

TABLE NO. 50

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	120.906	4.35	52.639
2.	Buffalo	144.513	2.08	30.014
3.	Sheep	11.222	20.45	22.954
4.	Goat	10.227	41.19	42.127
5.	Pig	24.560	2.37	5.818
Total		-	-	153.552

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 accounted from cattle, 20 % from buffaloes, 15 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. 51 below.

TABLE NO. 51.

Estimated number of hides and Skins

Sr. No.	Production of	Category	Estimated No. of hides/skins (in lakhs)
1	2	3	4
1)	Hides	a) Cattle	7.16
		b) Buffaloes	3.52
		Total hides	10.68
2)	Skins	a) Goat	45.37
		b) Sheep	21.51
		Total skins	66.88

.. 47 ..
TABLE NO. 52

Comparative Statement showing Estimated annual production of milk, egg, wool and Meat in Maharashtra State from the year 1970-71 to 1986-87.

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	1062	69	1025	70
2.	1971-72	1036	66	1119	70
3.	1972-73	949	67	911	76
4.	1973-74	1003	70	936	76
5.	1974-75	1195	73	970	79
6.	1975-76	1280	77	1016	78
7.	1976-77	1304	78	890	83
8.	1977-78	1522	81	923	93
9.	1978-79	1540.5	91	1047	106
10.	1979-80	1635	103	1125	122
11.	1980-81	1756	115	1217	147
12.	1981-82	1909	124	1245	160
13.	1982-83	2009	129	1304	158
14.	1983-84	2228	135	1309	151
15.	1984-85	2358	143	1311	160
16.	1985-86	2466	151	1339	159
17.	1986-87	2459	159	1357	154

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

CHAPTER - VI

SUMMARY

The Integrated Survey Scheme has been implemented by the Department for estimation of annual production of four important livestock products viz. Milk, Wool, and meat and to study the Ecological livestock keeping practices followed in the State. The present report deals with the results obtained from the data collected, during 1986-87.

6.1 Sampling design :- The sampling design adopted for the survey was a multi-stage stratified random sampling. Thirty districts of the State were divided into 12 groups, each consisting of about 1 to 4 districts. Gr. Bombay districts 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 5 villages for collection of data.

6.2 Results :

1. A total 590 villages were visited by the survey Assts. for collection of data. The average number of households per village were 194.

2. About 23 percent households had no livestock or poultry. Sixty-four percent of households had bovines, about 32 percent households had poultry. While 26 percent had goats and only 1 percent households reared sheep.

3. The data regarding 10,820 bovines were collected for 48,852 bovines from 10,820 bovine keeper households and a total of 12,593 animals were observed for milk production.

4. The estimated number of in-milk cows was 22.27 lakhs and that of in-milk buffaloes was 13.50 lakhs.

5. The average daily milk yield per in-milk cow was estimated as 1.297 Kg. and for in-milk buffalo as 2.548 Kg.

6. The annual milk production in the state was estimated as 2310 thousand tonnes (from bovines) & 2459 (000 MT) inclusive of goat milk.

7. Per capita per day availability of milk was found to be 91 Gm. (cow milk + buffalo milk) & 97 Gms. if goats milk is included.

8. About 12 percent cattle and 3 percent buffaloes were kept on grazing alone.

9. The average quantity of the dung dropped in the shed was 3.5 Kg. per day per animals. The quantity of dung collected during the year for the State was estimated as 26,321.5 thousand M.T.

10. The annual mortality observed in cattle class was 1.7% and that in buffaloes was 3.4 percent.

11. A total 21,303 households were observed for egg production and poultry rearing practices. From these, about 65 thousand layers were observed for egg production.

12. The estimated number of deshi layers for the state during the year was 75.76 lakhs and that of improved layers was 20.24 lakhs. The laying percentages observed were 31.72 and 69.04 in deshi layers and improved layers, respectively.

13. The estimated egg production was worked out as 153.83 crores. Out of this, the contribution from Deshi layers was 87.72 crores and remaining 71.16 crores from improved layers.

14. Per capita per annum availability of eggs was 23 eggs.

15. The daily average quantity of grains fed per poultry bird was 17 Gms.

16. The annual mortality in poultry was about 19 percent, it being maximum in chicks (about 32 percent).

17. The average wool yield per sheen shorn during the year was 566 Gm. The estimated annual wool production for the State was 1357 tonnes.

18. The annual mortality in sheep was 3.8 percent.

19. The average daily milk yield per goat in milk was 173 Gm. The estimated annual goat milk production was 149 thousand tonnes.

20. The annual mortality percentage in goats was 4.9.

21. The average meat production per animal was 120.9 Kg. for cattle, 144.5 Kg. for buffalo, 11.2 Kg. for sheep, 1022 Kg. for goat and 24.6 Kg. for Pig. The total annual meat production was estimated as 154 thousand tonnes.

22. The number of pieces of hides obtained during the year was estimated as 10.63 lakhs and that of skins was 66.33 lakhs.

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