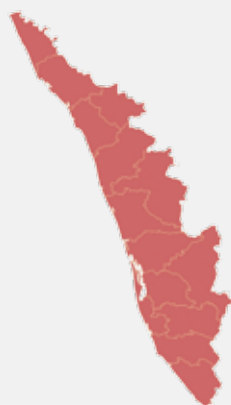




National Dairy
Development
Board

DAIRYING IN



KERALA

A STATISTICAL PROFILE 2016



District Map of Kerala





FOREWORD

In this publication “Dairying in Kerala - A Statistical Profile 2016”, the major highlights are: trend in human demographics, livestock population and production; inputs for enhancement of productivity such as breeding, health and nutrition. This publication includes statistical tables and thematic maps on selected parameters along with time series data of districts wherever available.

The objective of this publication is to provide a detailed presentation of various parameters, underlying factors and their inter-linkages so as to enable effective planning and implementation of various development interventions. We hope that a wide range of readers, students, researchers, veterinarians, planners, scientists, administrators, policy makers and professionals in government and non-governmental organisations, will find this publication useful. This publication aims at balancing the most comprehensive information with the most relevant.

We sincerely thank government and non-government agencies for providing information. While extreme care has been taken in putting together data in a systematic and comprehensible manner, some errors cannot be ruled out.

This publication “Dairying in Kerala - A Statistical Profile 2016” is amongst a series of similar publications for different states being brought out by National Dairy Development Board (NDDB).

Dilip Rath

Managing Director, NDDB

March 2016
Anand, Gujarat



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PART I : GENERAL STATISTICS

The economic progress of Kerala is lauded as the “Kerala Model” of development and is highly appreciated by economists, political scientists and sociologists both for higher growth rate and equitable distribution of human development. The State surpasses national averages in key growth indicators like GDP, capital expenditure, literacy, sex ratios etc. Even when there was slump in the Indian economy, Kerala continued to achieve growth in GDP on account of huge inflow of remittance from its large non-resident community. The per capita income of the state is higher than the per capita national income. Kerala has the lowest population growth rate in India; highest literacy rate of 94 per cent; highest life expectancy of 77 years and the highest sex ratio of 1,084 women per 1,000 men.

Kerala has also retained its traditional strength in the education sector, the teacher-pupil ratio has doubled from 2 teachers for every 100 pupils a decade ago to 4 now and has highest effective literacy rate of 94 per cent. The State produces 97 per cent of national output of pepper and has 85 per cent of the area under natural rubber in the country. It is also the leading producer of coconut and spices — like cardamom, vanilla, cinnamon, and nutmeg.

A ‘Kerala Perspective Plan 2030’ has been formulated for holistic progress of the State.

(SOURCES : Economic Review 2015, Annual Plan 2015-16, Media Reports, Wikipedia, Govt. of Kerala website etc.)





I.1. Kerala at a Glance

TABLE I.1.1: General Statistics: Kerala vs. India

Particulars	Unit	Year	Kerala	India
State Geography & Rural Infrastructure				
Geographical area	'000 sq km	2011	38.8	3,287.3
Districts	Nos	"	14	640
Talukas	"	"	63	5,924
Villages	'000	"	1.02	640.9
Households	Million	"	7.8	249.5
Rural Households				
2001	'000	2001	5,010	137,414
2011	"	2011	4,149	168,565
Rural Households with Electricity				
2001	%	2001	66	44
2011	"	2011	92	55
Rural Households with Tap water supply				
2001	%	2001	14	24
2011	"	2011	24	31
Human Population				
Population	Millions	2011	33.4	1,210.1
Urban (As % of total)	%	"	47.7	31.2
Rural (As % of total)	"	"	52.3	68.8
Density of Population	Persons/ sq.km	"	860	382
Scheduled Castes (As % of total)	%	"	9.1	16.6
Scheduled Tribes (As % of total)	"	"	1.5	8.6
Sex Ratio	Ratio	"	1,084	943
Literacy Rate (excluding population of 0 to 6 age group)				
Male	%	2011	96.1	80.9
Female	%	"	92.0	64.6
Urban	%	"	95.0	84.1
Rural	%	"	92.9	67.8
Per Capita Income (at current prices)	₹	2013-14	88,527	74,380
Livestock Population				
	Million	2012	2.7	512.0
Bovine	"	"	1.4	299.9
Indigenous Cattle	"	"	0.07	151.2
Crossbred Cattle	"	"	1.2	39.7
Buffaloes	"	"	0.1	108.7
Small Ruminants	"	"	1.2	200.2
Poultry	"	"	24.2	729.2
Livestock Population				
	Million	2007	3.6	529.7
Bovine	"	"	1.8	304.8
Indigenous Cattle	"	"	0.1	166.0
Crossbred Cattle	"	"	1.6	33.1
Buffaloes	"	"	0.06	105.3
Small Ruminants	"	"	1.7	212.1
Poultry	"	"	15.7	648.9



I.1. Kerala at a Glance

TABLE I.1.1: General Statistics: Kerala vs. India

Particulars	Unit	Year	Kerala	India
Number of Major Cattle Breeds	nos	2015	1	36
Number of Major Buffalo Breeds	"	"	-	13
Milk Production				
Milk Production - Total	'000 MT	2014-15	2,711	146,313
Crossbred Cattle	"	"	2,531.4	36,938
Indigenous Cattle	"	"	2.5	29,484
Buffaloes	"	"	62.4	74,709
Goats	"	"	114.8	5,180
Per Capita Milk Availability	grams/day	2013-14	203	307
Egg Production	million	2014-15	2,504	78,484
Estimated Meat Production	'000 MT	"	446	6,691
Marine & Inland Fish Production	"	2013-14	709	9,579
Wool Production	'000 kg	2014-15	-	48,139
Veterinary Infrastructure & Services				
Veterinary Institutes	nos	2013-14	1,193	60,896
Semen Stations	"	"	6	57
AI Centers	"	"	2,507	83,796
AI Done	'000	"	1,245	58,532
Vaccination Done				
H.S. Vaccination	"	2014-15	140	
B.Q. Vaccination	"	"	11	
FMD Vaccination	"	"	1,054	
Total Treatment	"	2013-14	5,078	
Total Castration	"	"	2	
Agricultural Resources				
Forest Cover	%	2012-13	28.0	21.30
Pasture and Grazing Land	'000 ha	"	0	10,240
As % of total reporting area	%	"	0	3.3
Area Under Fodder Crops	'000 ha	"	5.6*	9,188
Gross Irrigated Area As % Gross Cropped Area	%	"	17.7	47.6
Cropping Intensity	%	"	126.5	139
Irrigation Intensity	%	"	116	140
Production of Major Crops				
Cereals	'000 MT	2013-14	564.3	245,790
Pulses	"	"	3.0	19,253
Oilseeds	"	"	1.0	32,749
Cotton	'000 bales (170 kg Each)	"	-	35,902
Sugarcane	'000 MT	"	221.5	352,142
Ground Water Status				
Safe	% of Blocks	2011 & (2009)	83 (83)	69 (73)
Semi Critical	"	"	15 (14)	11 (9)



I.1. Kerala at a Glance

TABLE I.1.1: General Statistics: Kerala vs. India

Particulars	Unit	Year	Kerala	India
Critical	"	"	1(2)	3 (3)
Over Exploited	"	"	1(1)	16 (14)
Salinity Affected	"	"	-	1(1)

SOURCES: Census 2001 & 2011, Office of the Registrar General and Census Commissioner, Govt. of India, New Delhi.

18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.

Minutes of the Meeting of Technical Committee on Direction for improvement of Animal Husbandry Statistics held during 4th to 5th June, 2015,

Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.

Dynamic Ground Water Resources of India as on 31st March, 2009, 2011, Central Ground Water Board, Ministry of Water Resources, Govt. of India.

Directorate of Economics and Statistics, Ministry of Agriculture & Farmers Welfare, Govt. of India.

Ministry of Statistics and Programme Implementation, Govt. of India.

NOTE: Per Capita income is for 2012-13 for Kerala.

* for the year 2014-15.

TABLE I.1.2: Change in name of Districts in Kerala

Old name of the district	New name of the district
Alleppey	Alappuzha
Calicut	Kozhikode
Cannanore	Kannur
Palghat	Palakkad
Quilon	Kollam
Trichur	Thrissur
Trivandrum	Thiruvananthapuram

SOURCE: District Administration Websites of Govt. of Kerala.





I.2. Social Statistics: Human Population

TABLE I.2.1: Human Population by Residence and Sex –2001

Districts	Rural ('000)			Urban ('000)			Total ('000)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
KERALA	11,451.3	12,123.2	23,574.4	4,017.3	4,249.6	8,266.9	15,468.6	16,372.8	31,841.4
Alappuzha	712.9	774.8	1,487.7	301.7	319.8	621.5	1,014.5	1,094.6	2,109.2
Ernakulam	808.6	820.1	1,628.7	729.8	747.3	1,477.1	1,538.4	1,567.4	3,105.8
Idukki	538.1	533.6	1,071.6	28.6	29.0	57.6	566.7	562.5	1,129.2
Kannur	578.5	617.5	1,196.1	574.3	638.6	1,212.9	1,152.8	1,256.1	2,409.0
Kasaragod	475.2	495.2	970.4	112.9	120.8	233.7	588.1	616.0	1,204.1
Kollam	1,021.4	1,097.8	2,119.2	228.2	237.8	466.0	1,249.6	1,335.6	2,585.2
Kottayam	817.8	836.0	1,653.8	147.1	152.7	299.8	964.9	988.7	1,953.6
Kozhikode	863.6	914.3	1,778.0	535.7	565.4	1,101.2	1,399.4	1,479.8	2,879.1
Malappuram	1,581.8	1,687.5	3,269.3	172.8	183.4	356.2	1,754.6	1,870.9	3,625.5
Palakkad	1,093.5	1,167.4	2,260.9	173.5	183.1	356.6	1,267.0	1,350.5	2,617.5
Pathanamthitta	529.8	580.4	1,110.2	59.6	64.2	123.8	589.4	644.6	1,234.0
Thiruvananthapuram	1,035.3	1,107.4	2,142.7	534.7	557.0	1,091.7	1,569.9	1,664.4	3,234.4
Thrissur	1,018.3	1,116.5	2,134.8	403.7	435.7	839.4	1,422.1	1,552.2	2,974.2
Wayanad	376.4	374.6	751.0	14.8	14.8	29.6	391.3	389.3	780.6

SOURCE: Census 2001, Office of the Registrar General and Census Commissioner, Govt. of India, New Delhi.





I.2. Social Statistics: Human Population

TABLE I.2.2: Human Population by Residence and Sex –2011

Districts	Rural ('000)			Urban ('000)			Total ('000)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
KERALA	8,408.1	9,063.1	17,471.1	7,619.4	8,315.6	15,934.9	16,027.4	17,378.6	33,406.1
Alappuzha	464.7	514.9	979.6	548.4	599.7	1,148.1	1,013.1	1,114.6	2,127.8
Ernakulam	518.5	529.5	1,048.0	1,101.0	1,133.3	2,234.4	1,619.6	1,662.8	3,282.4
Idukki	527.2	529.7	1,056.9	25.6	26.5	52.0	552.8	556.2	1,109.0
Kannur	425.7	456.3	882.0	755.8	885.2	1,641.0	1,181.4	1,341.6	2,523.0
Kasaragod	387.7	410.6	798.3	240.9	268.2	509.0	628.6	678.8	1,307.4
Kollam	680.7	767.5	1,448.2	566.3	620.9	1,187.2	1,247.0	1,388.4	2,635.4
Kottayam	692.7	716.5	1,409.2	275.6	289.8	565.4	968.3	1,006.3	1,974.6
Kozhikode	484.8	528.9	1,013.7	986.2	1,086.4	2,072.6	1,470.9	1,615.4	3,086.3
Malappuram	1,095.3	1,200.4	2,295.7	865.0	952.2	1,817.2	1,960.3	2,152.6	4,112.9
Palakkad	1,031.5	1,101.7	2,133.1	328.0	348.8	676.8	1,359.5	1,450.5	2,809.9
Pathanamthitta	499.8	566.0	1,065.8	61.9	69.7	131.6	561.7	635.7	1,197.4
Thiruvananthapuram	724.9	805.0	1,529.8	856.8	914.8	1,771.6	1,581.7	1,719.7	3,301.4
Thrissur	488.3	536.5	1,024.8	992.5	1,103.9	2,096.4	1,480.8	1,640.4	3,121.2
Wayanad	386.3	399.6	785.8	15.4	16.2	31.6	401.7	415.7	817.4

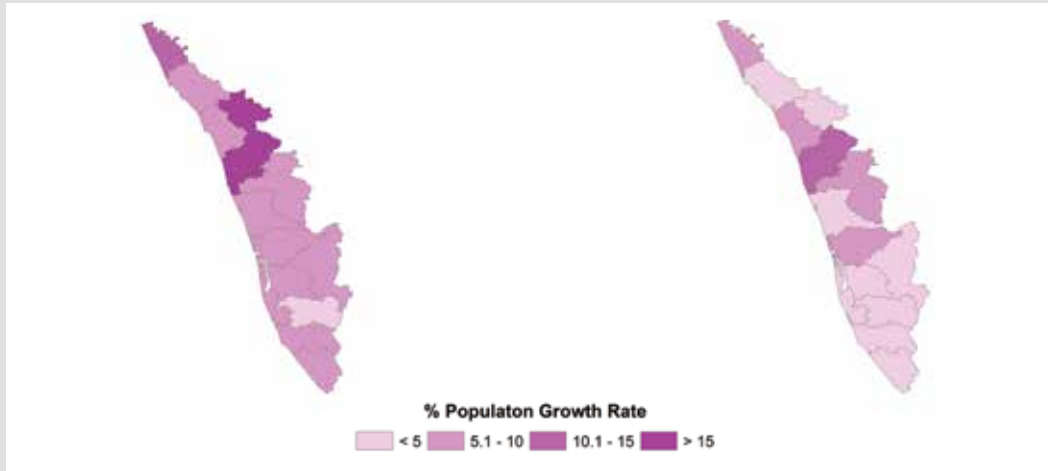
SOURCE: Census 2011, Office of the Registrar General and Census Commissioner, Govt. of India, New Delhi.



Decadal Growth Rate of Population

1991-2001

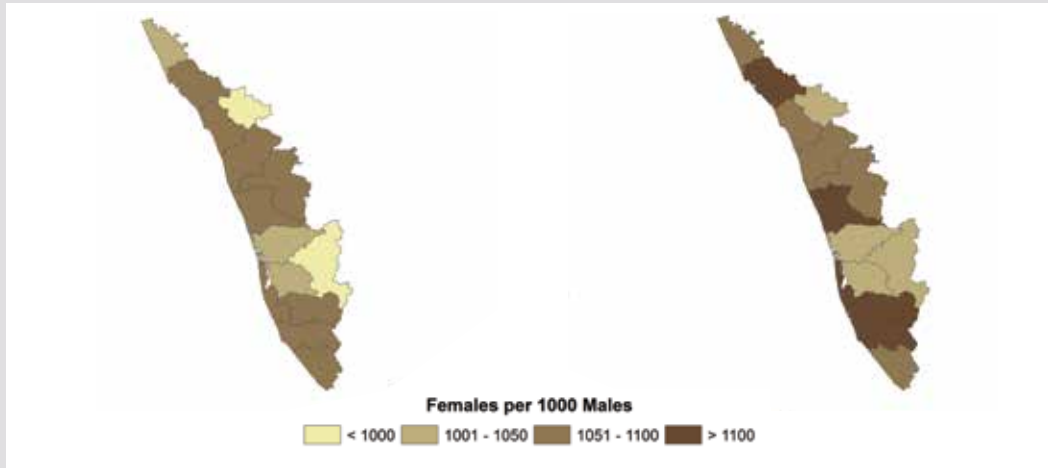
2001-2011



Sex Ratio (all age groups)

2001

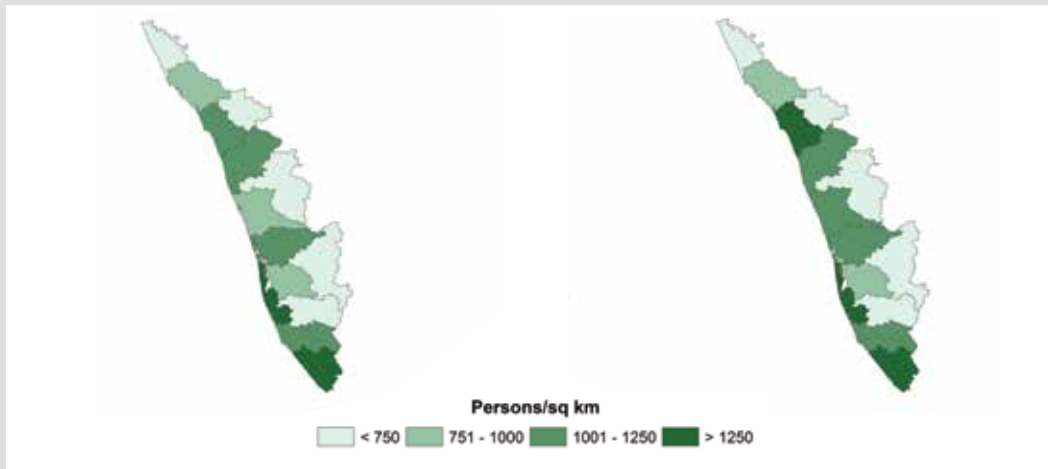
2011



Population Density

2001

2011



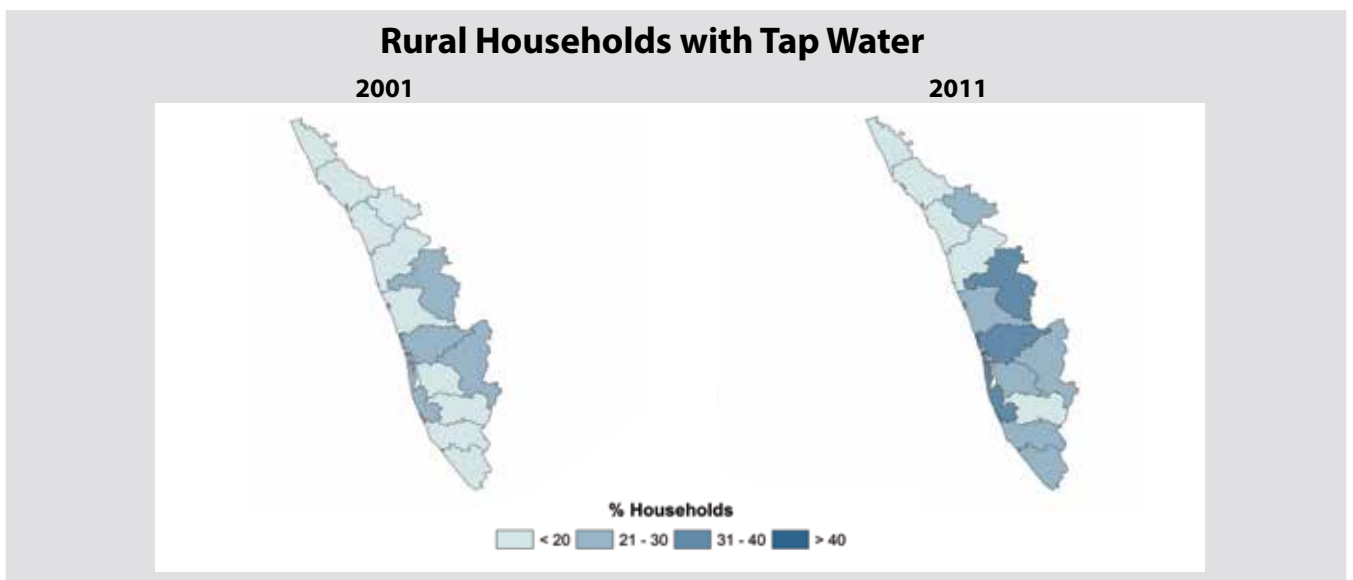
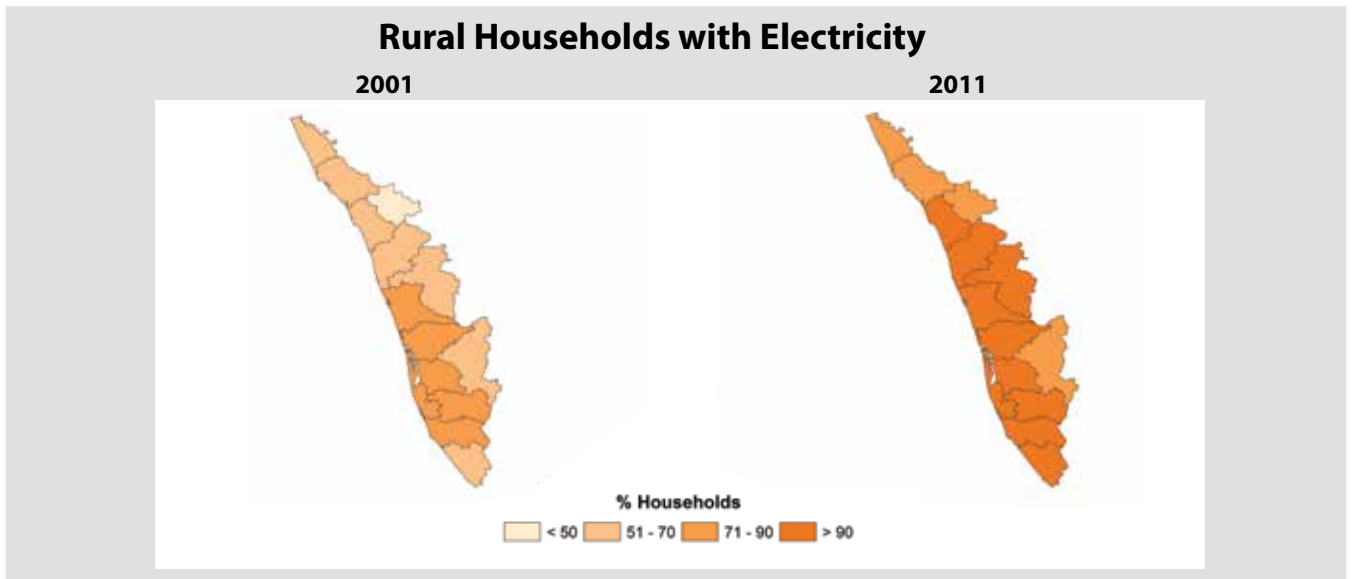
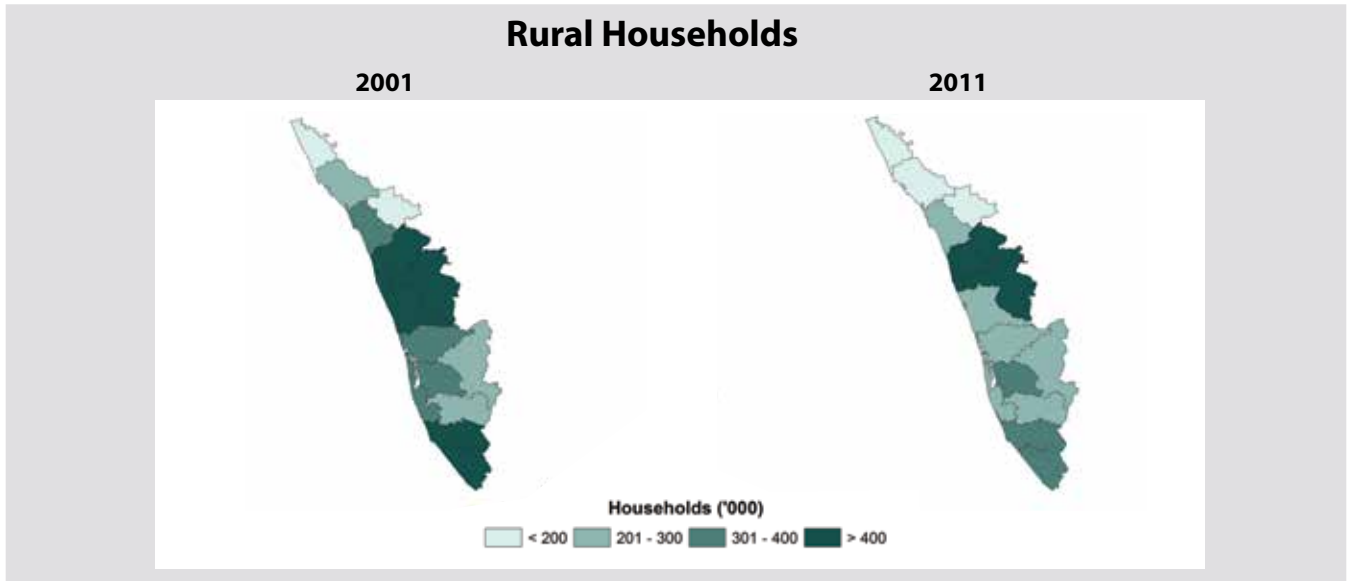


I.2. Social Statistics: Human Population

TABLE I.2.3: Rural Households, Electricity and Tap Water Supply - 2001 and 2011

Districts	Rural Households ('000)		Rural Households with Electricity ('000)		Rural Households with Tap Water (inclusive – treated & untreated) ('000)	
	2001	2011	2001	2011	2001	2011
KERALA	4,942.6	4,095.7	3,238.9	3,772.1	686.7	1,001.7
Alappuzha	343.3	245.8	249.1	234.2	79.6	86.7
Ernakulam	356.3	256.3	285.4	245.2	98.8	98.4
Idukki	253.9	264.6	141.2	232.7	59.1	77.6
Kannur	232.8	198.8	119.4	175.1	7.8	22.9
Kasaragod	177.7	166.0	93.1	140.0	8.3	17.8
Kollam	486.7	373.7	342.1	349.3	50.6	83.8
Kottayam	362.9	342.7	275.0	328.8	51.9	69.2
Kozhikode	359.6	232.2	200.3	210.1	17.4	41.2
Malappuram	540.2	437.5	338.5	406.8	30.7	66.6
Palakkad	450.3	476.3	257.6	440.1	98.5	186.6
Pathanamthitta	263.1	285.4	185.4	269.0	31.4	49.4
Thiruvananthapuram	507.6	390.6	352.6	360.4	56.6	89.9
Thrissur	450.2	246.9	334.1	236.4	74.7	71.9
Wayanad	157.9	178.7	65.1	143.9	21.4	39.8

SOURCE: Census 2001 and 2011, Office of the Registrar General and Census Commissioner, Govt. of India, New Delhi.





I.2. Social Statistics: Human Population

TABLE I.2.4: District-wise SC and ST Population – 2001 and 2011

Districts	SC Population ('000)		ST Population ('000)	
	2001	2011	2001	2011
KERALA	3,123.9	3,039.6	364.2	484.8
Alappuzha	199.2	201.2	3.1	6.6
Ernakulam	263.5	268.4	10.0	16.6
Idukki	159.4	145.5	51.0	55.8
Kannur	99.0	83.4	20.0	41.4
Kasaragod	90.2	53.3	30.3	48.9
Kollam	322.9	328.3	5.2	10.8
Kottayam	150.3	153.9	18.3	22.0
Kozhikode	201.0	199.2	5.9	15.2
Malappuram	285.4	308.3	12.3	23.0
Palakkad	432.6	403.8	39.7	49.0
Pathanamthitta	162.0	164.5	6.5	8.1
Thiruvananthapuram	370.9	373.0	20.9	26.8
Thrissur	354.2	324.4	4.8	9.4
Wayanad	33.4	32.6	136.1	151.4

SC: Scheduled Caste, ST: Scheduled Tribe

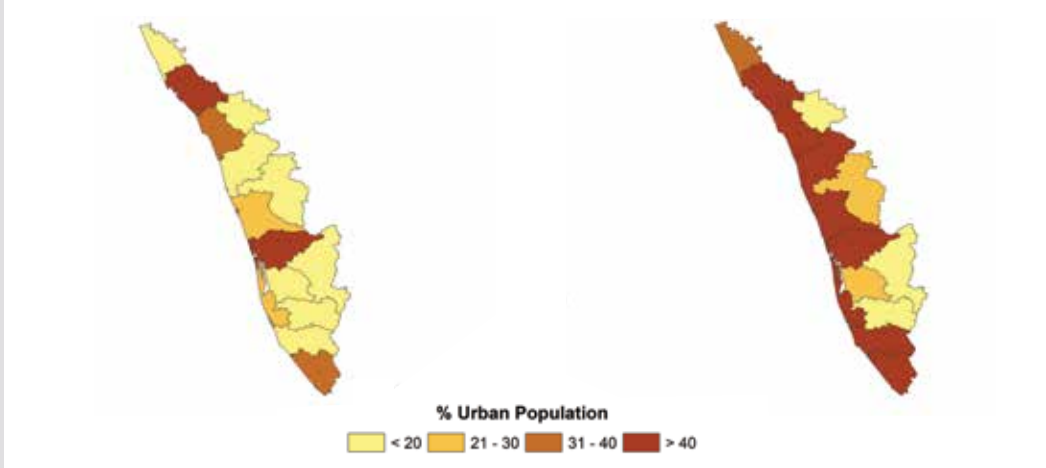
SOURCE: Census 2001 and 2011, Office of the Registrar General and Census Commissioner, Govt. of India, New Delhi.



Urbanisation (%)

2001

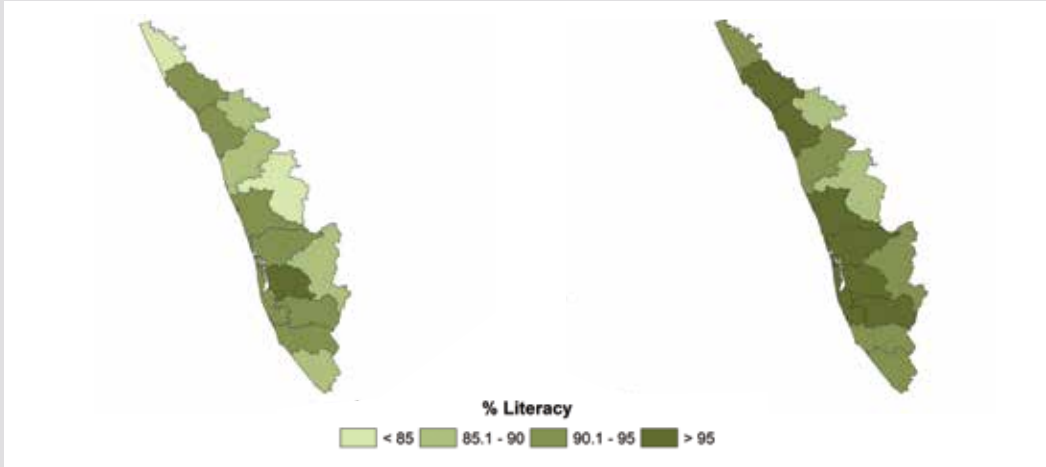
2011



Literacy Rate

2001

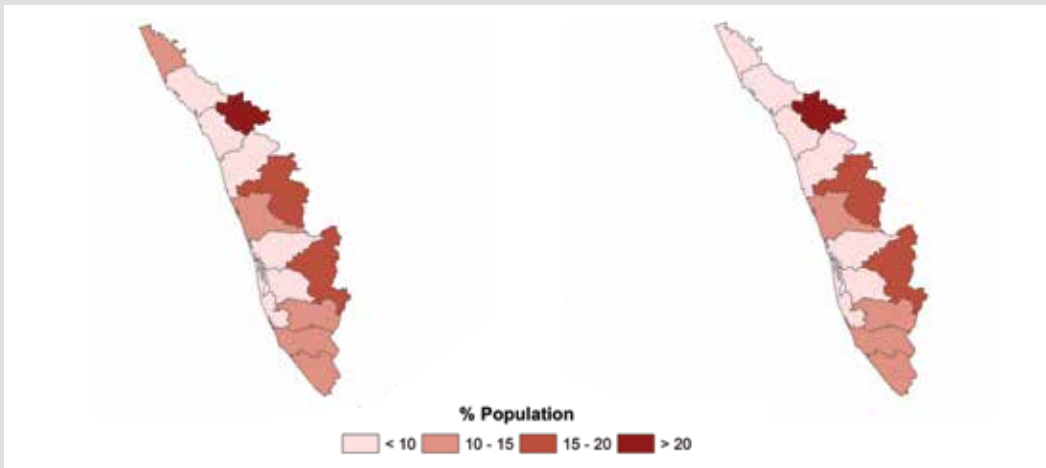
2011



Scheduled Caste and Scheduled Tribe Population (%)

2001

2011





I.3. State Economy

TABLE I.3.1: Net State Domestic Product (NSDP) and Per Capita Income

Sector	At Current Prices (₹ crores)									
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
State Domestic Product	104,776	120,269	135,104	153,981	180,134	206,070	233,177	277,233	308,272	351,245
1. Agriculture	13,651	15,114	16,605	18,020	21,316	21,449	29,065	34,516	34,426	36,825
2. Forestry & Logging	2,022	2,558	2,264	2,572	3,468	4,116	3,957	3,968	4,213	4,771
3. Fishing	1,580	2,174	2,301	2,306	2,307	2,706	2,908	3,219	4,394	5,343
4. Agriculture & Allied (1+2+3)	17,253	19,846	21,170	22,898	27,091	28,271	35,930	41,702	43,033	46,939
As % of NSDP	16.47	16.50	15.67	14.87	15.04	13.72	15.41	15.04	13.96	13.36
Sub-total of Primary	17,636	20,429	21,682	24,019	28,128	29,596	37,329	43,574	44,999	48,469
As % of NSDP	16.83	16.99	16.05	15.60	15.61	14.36	16.01	15.72	14.60	13.80
Sub-total of Secondary	22,986	26,393	29,974	34,205	37,349	42,482	51,646	58,100	63,587	67,996
As % of NSDP	21.94	21.95	22.19	22.21	20.73	20.62	22.15	20.96	20.63	19.36
Services	64,153	73,447	83,449	95,758	114,657	133,992	144,202	175,560	199,686	234,780
As % of NSDP	61.23	61.07	61.77	62.19	63.65	65.02	61.84	63.33	64.78	66.84
Per Capita Income (₹)	32,351	36,958	41,318	46,865	54,560	62,114	69,943	82,753	91,567	103,820

Sector	At 2004-05 Prices (₹ crores)									
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
State Domestic Product	104,776	115,500	124,625	135,747	144,094	157,123	167,178	176,915	187,327	199,478
1. Agriculture	13,651	14,371	12,782	12,645	13,685	12,982	11,635	12,284	12,448	12,090
2. Forestry & Logging	2,022	2,107	2,114	2,232	2,303	2,373	2,345	2,396	2,456	2,539
3. Fishing	1,580	1,405	1,481	1,473	1,470	1,463	1,411	1,449	1,437	1,515
4. Agriculture & Allied (1+2+3)	17,253	17,883	16,377	16,350	17,458	16,818	15,391	16,129	16,341	16,144
As % of NSDP	16.47	15.48	13.14	12.04	12.12	10.70	9.21	9.12	8.72	8.09
Sub-total of Primary	17,636	18,375	16,806	16,681	17,839	17,308	15,873	16,741	16,929	16,642
As % of NSDP	16.83	15.91	13.49	12.29	12.38	11.02	9.49	9.46	9.04	8.34
Sub-total of Secondary	22,986	25,294	26,989	29,204	29,232	31,008	35,623	37,112	37,913	38,531
As % of NSDP	21.94	21.90	21.66	21.51	20.29	19.73	21.31	20.98	20.24	19.32
Services	64,153	71,831	80,830	89,862	97,023	108,807	115,682	123,061	132,486	144,305
As % of NSDP	61.23	62.19	64.86	66.20	67.33	69.25	69.20	69.56	70.72	72.34
Per Capita Income (₹)	32,351	35,492	38,113	41,315	43,644	47,360	50,146	52,808	55,643	58,961

SOURCE: Ministry of Statistics and Programme Implementation, Govt. of India.

NOTE: The estimates are as on 31.07.2015.





I.3. State Economy

TABLE I.3.2: Value of Output: Agriculture and Livestock

Item	At Current Prices						
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Value of Output (₹ billion)							
Agriculture & Allied	230.0	272.9	290.8	305.1	354.4	388.3	464.8
Agriculture	143.5	161.5	173.5	167.5	198.5	207.2	281.8
Livestock	39.2	51.3	56.6	70.7	80.8	88.0	93.3
Milk	22.8	27.5	28.9	37.5	48.0	52.0	55.4
Meat	11.8	19.0	21.9	25.9	25.0	26.5	27.6
Egg	2.0	1.7	2.0	2.8	3.3	4.8	5.8
Dung	2.5	2.8	3.5	4.2	4.1	4.1	4.0
Others [^]	0.1	0.2	0.2	0.3	0.4	0.6	0.6
Share of Value of Output to Agriculture and Allied (%)							
Agriculture	62.40	59.19	59.67	54.89	56.02	53.35	60.64
Livestock	17.04	18.80	19.46	23.16	22.80	22.66	20.08
Share of Value of Output to Livestock Output (%)							
Milk	58.28	53.65	51.15	53.00	59.41	59.12	59.33
Meat	30.00	37.11	38.66	36.63	30.94	30.08	29.57
Egg	5.17	3.37	3.52	3.91	4.07	5.51	6.18
Dung	6.28	5.54	6.26	5.97	5.07	4.65	4.28
Others [^]	0.27	0.33	0.40	0.49	0.51	0.64	0.64

Item	At Constant Prices (2004-05)						
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Value of Output (₹ billion)							
Agriculture & Allied	230.0	248.1	234.2	224.5	255.0	234.8	224.7
Agriculture	143.5	160.4	144.2	130.8	142.4	136.6	126.4
Livestock	39.2	41.0	41.7	44.9	46.0	46.8	48.9
Milk	22.8	23.3	23.9	25.4	27.5	28.3	29.9
Meat	11.8	13.1	13.1	14.6	13.4	13.1	13.5
Egg	2.0	2.0	2.0	2.3	2.6	2.8	2.9
Dung	2.5	2.4	2.3	2.2	2.1	2.1	2.0
Others [^]	0.1	0.2	0.3	0.4	0.4	0.5	0.5
Share of Value of Output to Agriculture and Allied (%)							
Agriculture	62.40	64.65	61.56	58.24	55.83	58.20	56.27
Livestock	17.04	16.53	17.79	20.00	18.04	19.92	21.74
Share of Value of Output to Livestock Output (%)							
Milk	58.16	56.83	57.31	56.57	59.78	60.47	61.15
Meat	30.10	31.95	31.41	32.52	29.13	27.99	27.61
Egg	5.10	4.88	4.80	5.12	5.65	5.98	5.93
Dung	6.38	5.85	5.52	4.90	4.57	4.49	4.09
Others [^]	0.26	0.49	0.72	0.89	0.87	1.07	1.02

[^] Includes Wool and Hair, Silkworm Cocoons & Honey, Increment in Stock.

SOURCE: State wise estimates of value of output from agriculture and allied activities with new base year 2004-2005 (Published in 2013), Ministry of Statistics and Programme Implementation, Govt. of India.



I.3. State Economy

TABLE I.3.3: Approved Project Cost for Dairying under Rashtriya Krishi Vikas Yojana (RKVY) in Kerala

Segment	Approved Project Cost (₹ crores)								Grand Total
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	
Initiation, Modernization and Infrastructure support to existing dairy units		0.51	0.63			5.39	11.00	14.16	31.69
Others	0.28	0.20	1.08	2.25	4.70	2.74	1.25	2.08	14.58
Clean milk production		0.26	0.2389			2.10			2.60
Enhancing rural milk marketing facilities with milk cooler and milk packaging facilities to Dairy Cooperatives			0.15	0.68	1.13				1.96
Strengthening of dairy cooperatives	1.41	0.43	0.075						1.91
Quality control lab for milk and cattle feed plant	0.34	0.03				1.24			1.61
Commercial dairy unit		0.09	0.04	1.20					1.32
Modernization of dairy training center	0.10	0.04	0.03						0.17
Total	2.13	1.56	2.24	4.13	5.83	11.47	12.25	16.24	55.85

SOURCE: Rashtriya Krishi Vikas Yojana, Department of Agriculture and Cooperation, Ministry of Agriculture & Farmers Welfare, Govt. of India.





I.3. State Economy

TABLE I.3.4: Approved Project Cost for Animal Husbandry under Rashtriya Krishi Vikas Yojana (RKVY) in Kerala

Segment	Approved Project Cost (₹ crores)								Grand Total
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	
Cattle feed manufacturing and Solvent extraction unit and Feed mixing plant		4.00	5.00	5.00	10.50	15.70	11.00	17.33	68.53
Calf and cattle feed subsidy scheme	4.55	2.19	1.16	6.24	21.72	9.47		4.26	49.59
Govardhini - to enroll 100,000 calves to provide scientific management and assistance for feed, health care and allied activities							47.92		47.92
Poultry and Duck Development	1.45	1.48	4.47	2.34	1.51	2.37	7.78	10.39	31.79
Others	0.20	0.13	1.09	0.90	5.09	1.50	4.20	8.23	21.34
Goat Development	0.03	0.60	0.22	0.50	1.30	2.28	1.43	5.75	12.11
Animal Breed Improvement Programme including AI and establishment of bull mother farm	1.49	1.00	2.95	3.00	5.25				13.69
Jaivasree project for promotion of self sufficient villages						10.18			10.18
Cattle shed	4.14	0.56	2.01		2.41				9.12
Feeding of male calf, milch and Pregnant cow and summer feeding		0.62	2.56		3.84			1.20	8.22
Distribution of health care kits, disease control initiatives, development of health care workers	2.08	0.59		5.00	0.10				7.77
Piggery Development		0.25	0.8885	2.37		1.95		3.06	8.52
Fodder cultivation	2.28	0.83	0.60		0.05				3.76
Buffalo rearing/Male calf fattening	1.01		1.37		0.77				3.15
Cattle Insurance	1.44		0.38						1.82
Total	18.67	12.25	22.70	25.35	52.54	43.45	72.33	50.22	297.51

SOURCE: Rashtriya Krishi Vikas Yojana, Department of Agriculture and Cooperation, Ministry of Agriculture & Farmers Welfare, Govt. of India.



PART II : LIVESTOCK CENSUS

The livestock sector in Kerala contributed about 27.6 per cent of the Agricultural GDP of the State during 2014-15 at constant price. This sector provides employment opportunities, asset creation, financial security and insurance against crop failure.

According to the 2012 Livestock Census, the bovine population in Kerala was 14.3 lakhs, of which 87 per cent were crossbreds and exotic cows, 5 per cent here indigenous cows and remaining were buffaloes. The bovine population has continuously been declining over the years across all districts of the State. However, during the last decade, only the buffalo population has increased by 5 per cent per annum from 0.6 lakh in 2003 to 1.0 lakh in 2012 due to concerted efforts of Kerala Livestock Development Board (KLDB). The KLD Board has been producing millions of frozen buffalo semen from pedigree Murrah buffalo bulls and using them through AI centers spread across the State.

About two-third of dairy animals are available in 7 districts of Palakkad, Thrissur, Ernakulam, Kozhikode, Kollam, Thiruvananthapuram and Kannur.





II.1. Animal Population

TABLE II.1.1: Summary of Livestock Census (1997-2012) - Kerala

Population	Livestock Census			
	1997	2003	2007	2012
Total Bovine	2,602,172	2,187,071	1,798,262	1,430,896
Total Cattle	2,490,707	2,122,453	1,740,117	1,328,627
Total Exotic/ Crossbred cows	1,957,357	1,735,271	1,621,245	1,251,582
Females	1,813,264	1,599,843	1,479,012	1,115,375
under 1 year	346,008	284,962	261,073	266,848
1 to 2.5 year	285,280	442,344	400,813	218,254
In-milk	756,011	607,373	576,927	473,421
Dry	293,875	183,751	168,264	131,361
Milch	1,049,886	791,124	745,191	604,782
Not even calved once	89,475	56,233	47,260	14,873
Others	42,615	25,180	24,675	10,618
Males	144,093	135,428	142,233	136,207
Total Indigenous cows	533,350	387,182	118,872	77,045
Females	462,305	340,509	97,534	64,566
under 1 year	61,221	73,279	21,213	12,737
1 to 3 years	60,524	93,942	24,667	16,110
In-milk	195,665	106,639	33,688	21,022
Dry	75,298	45,178	14,082	10,986
Milch	270,963	151,817	47,770	32,008
Not even calved once	48,338	15,858	2,259	1,831
Others	21,259	5,613	1,625	1,880
Males	71,045	46,673	21,338	12,479
Total Buffaloes	111,465	64,618	58,145	102,269
Females	54,444	40,202	33,135	31,085
under 1 year	10,788	7,448	8,103	8,255
1 to 3 years	11,768	11,638	8,716	12,597
In-milk	20,401	12,712	10,220	6,823
Dry	6,752	5,100	3,189	2,407
Milch	27,153	17,812	13,409	9,230
Not even calved once	3,158	1,751	1,406	497
Others	1,577	1,553	1,501	506
Males	57,021	24,416	25,010	71,184

SOURCE: 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Govt of India.



II.1. Animal Population

TABLE II.1.2: District-wise Bovine Population

Districts	Indigenous Cattle ('000)				Crossbred Cattle ('000)				Buffalo ('000)			
	1997	2003	2007	2012	1997	2003	2007	2012	1997	2003	2007	2012
KERALA	533.4	387.2	118.9	77.0	1,957.4	1,735.3	1,621.2	1,251.6	111.5	64.6	58.1	102.3
Alappuzha	17.2	3.4	0.2	0.6	113.9	97.6	77.9	75.3	4.6	2.8	3.1	6.0
Ernakulam	32.7	18.1	4.6	4.7	172.5	155.2	150.4	102.1	7.2	6.8	5.1	12.8
Idukki	41.4	23.4	10.4	7.1	154.9	143.2	147.2	82.9	8.4	4.3	2.7	5.7
Kannur	34.0	38.3	3.8	1.5	122.2	121.6	115.3	98.3	3.8	1.1	0.7	0.8
Kasaragod	80.9	89.5	36.7	30.7	62.6	54.2	45.9	52.0	8.9	3.2	3.6	1.3
Kollam	26.7	8.1	1.1	1.4	155.7	147.0	123.3	100.9	6.2	2.8	4.5	5.8
Kottayam	17.1	5.8	0.6	0.9	155.1	132.2	122.0	80.8	3.4	2.2	1.9	6.1
Kozhikode	60.5	62.8	23.5	8.7	116.3	100.6	110.0	96.1	6.9	1.3	1.5	4.3
Malappuram	51.3	41.7	7.8	2.6	115.1	93.1	97.5	77.9	17.6	12.3	13.5	19.9
Palakkad	80.7	51.7	19.0	12.3	192.3	212.1	196.1	153.6	13.5	9.3	6.9	9.2
Pathanamthitta	25.0	5.8	0.8	0.6	112.8	108.0	97.5	63.8	4.1	0.9	0.9	2.8
Thiruvananthapuram	17.6	3.9	1.8	0.8	165.8	143.1	146.6	97.7	6.1	3.3	2.8	3.8
Thrissur	31.5	18.1	4.1	2.9	228.5	140.5	130.6	99.9	14.9	10.5	8.1	18.7
Wayanad	16.8	16.7	4.5	2.4	89.6	87.0	61.0	70.3	5.8	3.7	2.9	5.2

SOURCE: 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.



II.1. Animal Population

TABLE II.1.3: District-wise Female Population

Districts	Indigenous Cattle ('000)				Crossbred Cattle ('000)				Buffalo ('000)			
	1997	2003	2007	2012	1997	2003	2007	2012	1997	2003	2007	2012
KERALA	462.3	340.5	97.5	64.6	1,813.3	1,599.8	1,479.0	1,115.4	54.4	40.2	33.1	31.1
Alappuzha	15.6	3.2	0.1	0.5	106.9	91.4	73.7	69.1	1.7	2.0	2.2	3.4
Ernakulam	29.8	16.8	3.8	3.9	164.1	145.8	141.6	93.6	3.4	4.6	2.6	3.4
Idukki	35.2	20.7	8.0	6.1	141.1	131.5	134.8	73.8	5.0	3.7	1.9	2.7
Kannur	30.4	35.4	3.2	1.3	111.7	110.2	102.8	85.7	1.6	0.8	0.5	0.4
Kasaragod	67.0	77.1	30.8	26.5	54.9	48.5	40.1	45.9	3.8	1.6	2.5	0.5
Kollam	23.1	7.0	0.9	1.1	146.5	136.3	114.1	90.3	2.8	1.9	2.7	1.5
Kottayam	15.8	5.5	0.5	0.8	147.1	124.7	115.9	74.3	1.8	1.8	1.3	2.6
Kozhikode	54.3	56.9	19.9	7.5	106.7	91.4	95.9	83.9	3.3	0.7	0.6	0.6
Malappuram	42.4	36.3	6.1	1.8	103.1	83.2	85.7	65.3	8.7	6.1	6.4	1.9
Palakkad	67.9	42.5	15.0	9.3	172.3	190.5	174.5	132.5	5.9	4.2	3.2	1.6
Pathanamthitta	22.9	5.4	0.7	0.5	104.6	99.3	84.4	57.1	0.9	0.5	0.6	0.9
Thiruvananthapuram	16.0	3.3	1.6	0.7	158.8	136.2	138.2	90.2	3.8	2.7	1.8	2.0
Thrissur	28.6	16.3	3.5	2.3	213.8	132.0	122.0	91.3	9.9	8.5	5.6	8.9
Wayanad	13.2	13.9	3.4	2.0	81.6	78.8	55.3	62.4	2.1	1.3	1.3	0.6

SOURCE: 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.



II.1. Animal Population

TABLE II.1.4: District-wise Breedable Population

Districts	Indigenous Cattle ('000)				Crossbred Cattle ('000)				Buffalo ('000)			
	1997	2003	2007	2012	1997	2003	2007	2012	1997	2003	2007	2012
KERALA	370.8	220.3	64.0	43.8	1,324.6	1,093.7	1,017.5	739.4	37.8	26.9	20.7	16.5
Alappuzha	11.9	2.1	0.1	0.4	81.0	62.3	49.9	46.6	1.3	1.3	1.4	1.7
Ernakulam	25.6	10.8	2.6	2.7	125.7	100.7	98.0	61.8	2.5	3.2	1.4	1.8
Idukki	25.0	14.4	5.1	3.9	100.7	89.4	92.7	48.7	3.4	2.6	1.2	1.5
Kannur	23.5	23.3	2.2	1.0	82.5	75.5	70.8	57.1	1.1	0.6	0.3	0.3
Kasaragod	49.3	47.7	19.0	17.4	38.5	32.8	27.6	30.3	2.5	1.1	1.3	0.4
Kollam	20.4	4.9	0.6	0.8	105.6	91.9	76.4	60.0	2.0	1.3	2.1	0.8
Kottayam	13.0	3.7	0.3	0.5	113.1	86.5	82.9	49.5	1.3	1.3	0.7	1.3
Kozhikode	44.6	36.4	13.3	5.0	78.1	61.5	64.1	54.3	2.0	0.5	0.3	0.3
Malappuram	35.2	22.8	4.1	1.2	75.4	57.1	59.2	42.9	6.2	4.0	4.1	1.2
Palakkad	53.2	28.9	10.7	7.1	122.9	129.7	121.1	89.1	4.0	2.9	2.2	1.0
Pathanamthitta	19.6	3.5	0.4	0.4	76.5	67.9	59.0	37.4	0.7	0.4	0.4	0.5
Thiruvananthapuram	14.0	2.4	1.1	0.5	121.6	96.6	97.8	61.5	2.9	2.0	1.2	1.3
Thrissur	23.4	10.2	2.3	1.6	145.2	88.7	81.7	59.1	6.4	5.0	3.3	3.9
Wayanad	12.3	9.2	2.2	1.4	57.8	53.2	36.4	41.0	1.4	1.0	0.8	0.4

SOURCE: 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.





II.1. Animal Population

TABLE II.1.5: District-wise In-milk Population

Districts	Indigenous Cattle ('000)				Crossbred Cattle ('000)				Buffalo ('000)			
	1997	2003	2007	2012	1997	2003	2007	2012	1997	2003	2007	2012
KERALA	195.7	106.6	33.7	21.0	756.0	607.4	576.9	473.4	20.4	12.7	10.2	6.8
Alappuzha	6.3	1.2	0.0	0.2	46.1	36.9	30.7	31.6	0.8	0.7	0.6	0.7
Ernakulam	13.8	5.7	1.7	1.3	74.9	56.5	56.1	41.2	1.5	1.5	0.6	0.8
Idukki	11.1	6.6	2.0	1.8	52.4	47.0	49.2	30.2	1.7	1.1	0.5	0.7
Kannur	13.7	11.7	1.2	0.6	43.9	40.4	42.0	35.9	0.7	0.3	0.1	0.1
Kasaragod	24.9	21.7	9.4	7.9	18.8	16.8	16.1	17.9	1.2	0.5	0.8	0.1
Kollam	11.1	2.6	0.3	0.4	65.2	55.4	44.9	40.9	1.1	0.7	0.5	0.3
Kottayam	6.8	1.9	0.2	0.3	67.2	47.9	47.9	32.3	0.8	0.8	0.4	0.5
Kozhikode	22.5	17.4	6.5	2.4	42.5	31.4	31.7	30.4	1.0	0.2	0.2	0.1
Malappuram	18.8	11.0	2.3	0.7	41.5	29.7	31.3	26.3	2.9	1.9	1.8	0.5
Palakkad	28.4	14.5	6.7	3.5	69.6	70.3	67.3	54.4	2.2	1.5	1.4	0.5
Pathanamthitta	10.9	2.0	0.2	0.2	46.4	39.7	35.0	24.8	0.3	0.2	0.3	0.2
Thiruvananthapuram	7.7	1.4	1.0	0.4	74.6	61.5	62.3	45.8	1.9	1.2	0.9	0.9
Thrissur	13.4	5.1	1.2	0.7	81.7	47.0	43.3	37.5	3.5	2.1	1.7	1.2
Wayanad	6.2	3.9	1.0	0.7	31.1	26.7	19.3	24.3	0.6	0.2	0.5	0.1

Zero denotes either nil or negligible.

SOURCE: 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.



II.1. Animal Population

TABLE II.1.6: District-wise Milch Population

Districts	Indigenous Cattle ('000)				Crossbred Cattle ('000)				Buffalo ('000)			
	1997	2003	2007	2012	1997	2003	2007	2012	1997	2003	2007	2012
KERALA	271.0	151.8	47.8	32.0	1,049.9	791.1	745.2	604.8	27.2	17.8	13.4	9.2
Alappuzha	8.5	1.6	0.1	0.3	65.1	45.6	38.0	38.5	0.9	0.9	0.7	0.9
Ernakulam	19.3	7.7	2.1	2.1	102.8	72.8	70.3	50.7	1.8	2.0	0.8	1.0
Idukki	16.3	10.4	3.5	2.8	76.5	64.2	70.1	39.0	2.5	1.8	0.8	0.9
Kannur	18.9	16.2	1.6	0.8	63.8	53.3	53.4	46.2	0.8	0.4	0.2	0.2
Kasaragod	33.9	30.5	13.3	12.4	29.0	22.7	21.0	24.2	1.8	0.7	0.9	0.2
Kollam	16.1	3.7	0.5	0.6	86.8	69.5	56.9	51.2	1.5	0.9	0.8	0.5
Kottayam	9.1	2.6	0.2	0.4	92.6	62.2	60.5	39.9	1.0	1.0	0.5	0.7
Kozhikode	31.4	25.1	10.0	3.6	59.4	42.8	43.2	42.4	1.4	0.3	0.2	0.1
Malappuram	25.7	15.5	3.0	0.9	58.2	39.5	41.0	35.0	4.2	2.6	2.6	0.8
Palakkad	39.2	20.9	8.7	5.4	96.3	93.8	87.9	73.7	3.0	2.1	1.7	0.7
Pathanamthitta	14.4	2.5	0.3	0.3	60.9	50.5	43.6	30.7	0.5	0.3	0.3	0.2
Thiruvananthapuram	10.6	1.8	1.0	0.5	101.2	74.4	75.1	53.0	2.3	1.5	1.0	1.0
Thrissur	17.9	7.0	1.8	1.0	112.5	62.2	56.8	47.5	4.5	2.9	2.3	1.6
Wayanad	9.6	6.3	1.6	1.0	44.9	37.7	27.3	32.8	1.0	0.6	0.6	0.2

SOURCE: 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.



II.1. Animal Population

TABLE II.1.7: District-wise Male Population

Districts	Indigenous Cattle ('000)				Crossbred Cattle ('000)				Buffalo ('000)			
	1997	2003	2007	2012	1997	2003	2007	2012	1997	2003	2007	2012
KERALA	71.0	46.7	21.3	12.5	144.1	135.4	142.2	136.2	57.0	24.4	25.0	71.2
Alappuzha	1.6	0.2	0.0	0.1	7.0	6.2	4.2	6.2	2.9	0.8	0.9	2.5
Ernakulam	2.9	1.3	0.8	0.7	8.4	9.4	8.8	8.5	3.8	2.2	2.6	9.4
Idukki	6.2	2.7	2.4	1.0	13.8	11.8	12.3	9.1	3.5	0.7	0.9	3.0
Kannur	3.7	2.9	0.6	0.1	10.5	11.3	12.5	12.6	2.2	0.3	0.2	0.4
Kasaragod	13.8	12.4	5.9	4.2	7.7	5.7	5.7	6.2	5.1	1.6	1.1	0.8
Kollam	3.7	1.0	0.2	0.2	9.2	10.8	9.2	10.6	3.4	0.9	1.7	4.3
Kottayam	1.3	0.3	0.1	0.1	8.0	7.5	6.1	6.5	1.7	0.4	0.6	3.5
Kozhikode	6.2	5.9	3.6	1.1	9.6	9.2	14.1	12.1	3.6	0.6	0.9	3.7
Malappuram	8.9	5.4	1.7	0.9	11.9	9.8	11.8	12.7	9.0	6.3	7.1	18.0
Palakkad	12.8	9.2	3.9	3.0	20.0	21.6	21.7	21.0	7.6	5.1	3.7	7.5
Pathanamthitta	2.1	0.4	0.1	0.1	8.2	8.7	13.1	6.7	3.2	0.4	0.3	2.0
Thiruvananthapuram	1.6	0.6	0.3	0.1	7.0	6.9	8.4	7.5	2.4	0.6	0.9	1.8
Thrissur	2.8	1.7	0.6	0.6	14.7	8.5	8.6	8.6	5.0	2.1	2.5	9.7
Wayanad	3.5	2.8	1.1	0.4	8.1	8.2	5.7	7.9	3.7	2.4	1.6	4.6

Zero denotes either nil or negligible.

SOURCE: 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.



II.2. Sex Ratio in Dairy Animals

TABLE II.2.1: District-wise Male - Female Ratio

Districts	Indigenous Cattle (%)				Crossbred Cattle (%)				Buffalo (%)			
	1997	2003	2007	2012	1997	2003	2007	2012	1997	2003	2007	2012
KERALA	13	12	18	16	7	8	9	11	51	38	43	70
Alappuzha	9	6	10	11	6	6	5	8	62	30	30	42
Ernakulam	9	7	17	16	5	6	6	8	53	32	50	73
Idukki	15	11	23	14	9	8	8	11	41	16	32	52
Kannur	11	7	15	10	9	9	11	13	58	31	29	47
Kasaragod	17	14	16	14	12	10	13	12	58	51	31	59
Kollam	14	13	20	17	6	7	7	11	55	32	39	75
Kottayam	8	5	23	9	5	6	5	8	49	20	33	57
Kozhikode	10	9	15	13	8	9	13	13	53	48	59	86
Malappuram	17	13	22	32	10	11	12	16	51	51	52	91
Palakkad	16	18	21	24	10	10	11	14	57	55	54	82
Pathanamthitta	8	6	15	10	7	8	13	10	79	41	34	70
Thiruvananthapuram	9	14	15	9	4	5	6	8	38	17	34	47
Thrissur	9	10	14	20	6	6	7	9	33	20	31	52
Wayanad	21	17	24	15	9	9	9	11	64	66	56	88

SOURCE: Estimated from 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.



II.3. Wet-Dry Ratio of Dairy Animals

TABLE II.3.1: District-wise Wet-Dry Ratio

Districts	Indigenous Cattle (%)				Crossbred Cattle (%)				Buffalo (%)			
	1997	2003	2007	2012	1997	2003	2007	2012	1997	2003	2007	2012
KERALA	72	70	71	66	72	77	77	78	75	71	76	74
Alappuzha	74	73	76	79	71	81	81	82	83	76	80	80
Ernakulam	71	74	79	60	73	78	80	81	84	75	75	74
Idukki	68	64	58	65	69	73	70	77	71	63	59	77
Kannur	73	72	73	73	69	76	79	78	84	71	74	77
Kasaragod	73	71	71	64	65	74	76	74	69	67	88	57
Kollam	69	71	59	61	75	80	79	80	78	74	67	70
Kottayam	75	73	76	73	73	77	79	81	81	79	79	74
Kozhikode	72	69	65	68	72	73	73	72	73	68	75	68
Malappuram	73	71	75	73	71	75	76	75	69	71	69	67
Palakkad	72	69	78	66	72	75	77	74	72	71	83	67
Pathanamthitta	76	77	69	79	76	79	80	81	68	71	90	76
Thiruvananthapuram	73	78	96	80	74	83	83	87	82	79	92	85
Thrissur	75	73	65	66	73	76	76	79	79	72	74	74
Wayanad	65	62	62	62	69	71	71	74	63	45	79	53

SOURCE: Estimated from 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.





II.4. Livestock Density

TABLE II.4.1: District-wise Density of Total Livestock and Bovine

Districts	Livestock (No. per sq km)				Bovine (No. per sq km)			
	1997	2003	2007	2012	1997	2003	2007	2012
KERALA	110	90	92	70	67	56	46	37
Alappuzha	161	109	113	98	100	74	58	58
Ernakulam	153	100	109	81	90	59	52	39
Idukki	63	64	73	47	40	39	37	22
Kannur	77	76	72	54	54	54	40	34
Kasaragod	103	92	68	61	78	74	43	42
Kollam	128	108	103	89	75	63	52	43
Kottayam	142	115	117	86	80	64	57	40
Kozhikode	119	96	95	66	79	70	57	46
Malappuram	103	81	104	67	51	41	33	28
Palakkad	98	90	73	66	65	61	50	39
Pathanamthitta	80	62	71	45	53	43	37	25
Thiruvananthapuram	175	136	156	123	87	69	69	47
Thrissur	163	93	106	85	92	56	47	40
Wayanad	72	72	69	55	53	50	32	37

SOURCE: Estimated from 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.



II.4. Livestock Density

TABLE II.4.2: District-wise Density of Small Ruminants

Districts	Small Ruminants (No. per sq km)			
	1997	2003	2007	2012
KERALA	41	31	45	32
Alappuzha	60	35	55	39
Ernakulam	58	38	54	40
Idukki	18	19	32	23
Kannur	21	20	30	19
Kasaragod	24	17	23	17
Kollam	52	44	51	45
Kottayam	53	44	57	43
Kozhikode	39	25	37	19
Malappuram	52	39	70	39
Palakkad	32	29	23	25
Pathanamthitta	27	18	33	19
Thiruvananthapuram	88	67	86	75
Thrissur	69	35	56	42
Wayanad	18	20	35	17

SOURCE: Estimated from 16th, 17th, 18th and 19th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.



II.5. Breed-wise Population

TABLE II.5.1: District and Breed-wise Population of Exotic and Crossbred Animals in Kerala - 2007

Districts	Exotic and Crossbred Cattle Population ('000)							
	Jersey Exotic	Holstein Friesian Exotic	Other Exotic	Total Exotic Cattle	Jersey - Crossbred	Holstein Friesian - Crossbred	Other Crossbred	Total Exotic and Crossbred Cattle
KERALA	31.6	27.7	4.0	63.4	727.4	259.7	570.7	1,557.9
Alappuzha	0.2	0.1	0.0	0.2	35.9	11.1	30.7	77.7
Ernakulam	1.7	0.1	0.2	2.0	68.8	28.3	51.3	148.4
Idukki	1.1	10.1	0.7	11.9	64.4	32.0	38.9	135.3
Kannur	5.4	2.0	0.1	7.5	50.4	19.3	38.1	107.8
Kasaragod	1.2	1.4	0.0	2.6	24.3	6.1	12.9	43.3
Kollam	1.8	2.1	1.2	5.1	60.0	24.5	33.8	118.2
Kottayam	0.2	0.4	0.2	0.7	44.2	11.6	65.5	121.3
Kozhikode	5.0	5.3	0.0	10.4	38.5	17.4	43.7	99.6
Malappuram	6.5	2.0	0.3	8.8	33.1	11.0	44.6	88.7
Palakkad	0.6	0.5	0.1	1.3	103.3	27.0	64.6	194.9
Pathanamthitta	0.8	0.5	0.3	1.6	57.5	13.3	25.1	95.9
Thiruvananthapuram	5.7	1.8	0.6	8.1	67.1	24.5	46.8	138.4
Thrissur	0.4	0.3	0.1	0.8	49.6	19.5	60.7	129.8
Wayanad	1.1	1.2	0.2	2.5	30.4	14.0	14.1	58.5

Zero denotes either nil or negligible.

SOURCE: 18th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.





II.5. Breed-wise Population

TABLE II.5.2: District and Breed-wise Population of Buffalo in Kerala - 2007

Districts	Buffalo Breed Population ('000)				
	Murrah	Surti	Others graded	Non-descript	Total Buffalo
KERALA	19.7	1.4	4.0	32.8	58.1
Alappuzha	0.9	0.2	0.0	1.9	3.1
Ernakulam	2.4	0.0	0.3	2.4	5.1
Idukki	1.8	0.0	0.3	0.7	2.7
Kannur	0.4	0.0	0.1	0.2	0.7
Kasaragod	0.2	0.0	0.3	3.1	3.6
Kollam	0.9	0.0	0.0	3.5	4.5
Kottayam	1.0	0.0	0.0	0.9	1.9
Kozhikode	0.5	0.0	0.0	1.0	1.5
Malappuram	3.9	0.7	0.8	8.1	13.5
Palakkad	1.7	0.0	1.4	3.7	6.9
Pathanamthitta	0.2	0.0	0.0	0.6	0.9
Thiruvananthapuram	0.7	0.0	0.4	1.6	2.8
Thrissur	4.5	0.5	0.1	3.0	8.1
Wayanad	0.7	0.0	0.3	1.9	2.9

Zero denotes either nil or negligible.

SOURCE: 18th Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture & Farmers Welfare, Govt. of India.



PART III : CATTLE AND BUFFALO BREEDS

The Kerala Livestock Development Board (KLDB) is involved in providing breeding support to livestock sector. It produces and distributes frozen semen for Artificial Insemination (AI).

The cross-bred cattle constitute about 87 per cent of bovines in Kerala and have exotic inheritance from Jersey, Brown Swiss or Holstein Friesian or combination of these different breeds. The exotic brown Swiss breed cattle were originally imported under Indo-Swiss Project Kerala in 1963.

As regards indigenous cattle, Kerala has two local breeds - Vechur and Kasargod dwarf cattle. These local cattle are easy to rear, resistant to diseases and most importantly, better in tolerating high temperatures and humidity than the crossbred cattle. The high-yielding crossbred cattle undergo severe heat stress and even die during the hot and humid summer days. These dwarf cows need less food and water than crossbred cattle and meet the household milk requirement. Kerala's Vechur cow is the smallest in the World. There is no native buffalo breed in Kerala.





III.1. Distribution of Native Breeds of Kerala

TABLE III.1.1: Distribution of Cattle Breeds of Kerala

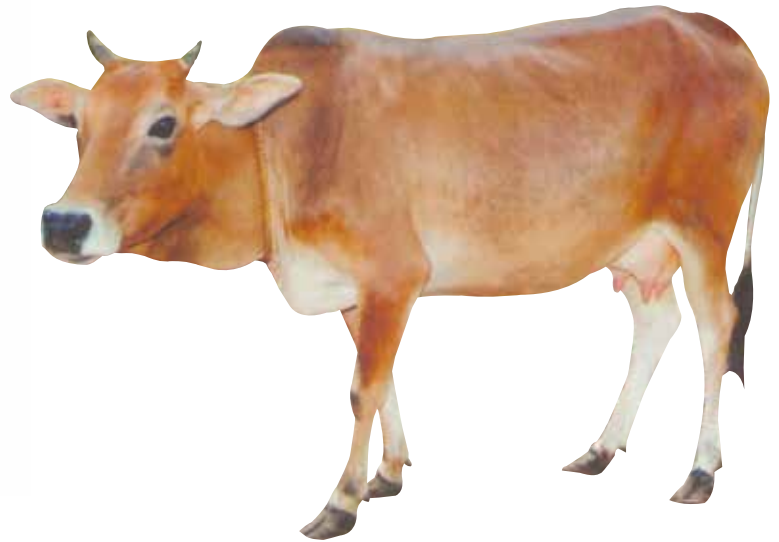
Breeds	Breeding Tract	Utility	Distribution
Vechur	Alappuzha, Kottayam, Pathanamthitta and Kasaragod	Milk and Dung	Kottayam, Thrissur, Palakkad, Ernakulam and Pathanamthitta

SOURCE: Animal Genetic Resources of India (AGRI-IS), National Bureau of Animal Genetic Resources, ICAR and Kerala Veterinary and Animal Sciences University.





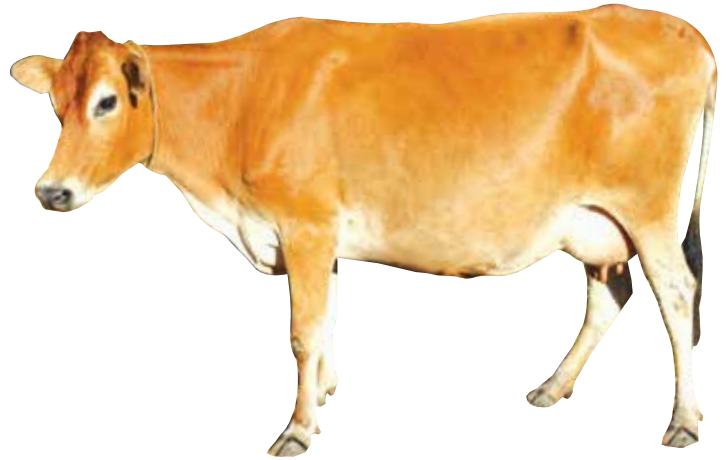
Distribution of Indigenous Cattle Breeds



 Vechur



Distribution of Jersey Crossbred



 Jersey Crossbred

Distribution of Holstein Friesian Crossbred



 Holstein Friesian Crossbred



III.2. Performance of Breeds

TABLE III.2.1: Performance of Cattle Breed

Parameters	Cattle
	Vechur
Population (As on 2012)	2.5
Colour	Animals are light red, black or fawn and white
Average Adult Body Weight (Kg)	Male : 178 Female : 132
Lactation Yield (Kg)	561
Lactation Length (days)	231
Calving Interval (days)	420
Age at First Calving (days)	1,080
Average Milk Fat (%)	4.7-5.8

SOURCE: Animal Genetic Resources of India (AGRI-IS), National Bureau of Animal Genetic Resources, ICAR and Dairy Farmers Manual, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Govt. of India.





PART IV : MILK PRODUCTION

Kerala produced about 26 lakhs tonnes of milk in 2014-15. Dairy Co-operatives procure about 11 Lakh Litres per Day (LLPD) which is about 15 per cent of the milk produced in the State and sell around 13 LLPD. The shortfall between milk procurement in the State and demand is met through outsourcing of milk from neighbouring states.

The Kerala Panchayat Raj (Licensing of Livestock Farms) Rules, 2012 is applicable on farm size of 6 and above dairy animals. In order to obtain license under the rules, these farms should have facilities for disposal of farm waste viz. dung pit, urine & wash water pit, compost pit and biogas plant.

The farms with 20 and above animals are categorized under Orange category of State Pollution Control Board and have to follow corresponding guidelines.

The Kerala Veterinary & Animal Sciences University (KVASU) has also launched a “precision farming” project to increase labour and feed efficiency in dairying.

(SOURCE : Kerala State Pollution Control Board)





IV.1. Production Performance

TABLE IV.1.1: Year-wise In-milk Bovine Population, Milk Yield and Milk Production

Year	In-milk Bovine ('000)	Milk Yield (kg per day)	Bovine Milk Production ('000 MT)
1992-93	1,249	3.91	1,784
1993-94	1,297	3.99	1,892
1994-95	1,354	4.06	2,006
1995-96	1,267	4.49	2,078
1996-97	1,285	4.56	2,140
1997-98	1,183	5.15	2,222
1998-99	1,184	5.31	2,294
1999-00	1,177	5.58	2,398
2000-01	1,173	5.80	2,483
2001-02	1,167	6.10	2,601
2002-03	1,040	6.09	2,313
2003-04	884	6.30	2,032
2004-05	838	6.38	1,950
2005-06	831	6.54	1,984
2006-07	811	6.87	2,033
2007-08	821	7.18	2,151
2008-09	861	7.47	2,347
2009-10	870	7.59	2,411
2010-11	808	8.58	2,533
2011-12	815	8.77	2,609
2012-13	846	8.70	2,686
2013-14	854	8.16	2,543
2014-15	863	8.24	2,596

SOURCE: Integrated Sample Survey Reports (1992-93 to 2012-13), Directorate of Animal Husbandry, Govt of Kerala and Technical Committee on Direction for improvement of Animal Husbandry Statistics (2013-14 and 2014-15), Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Govt. of India.



IV.1. Production Performance: Animal Population

TABLE IV.1.2: Year and District-wise In-milk Bovine Population

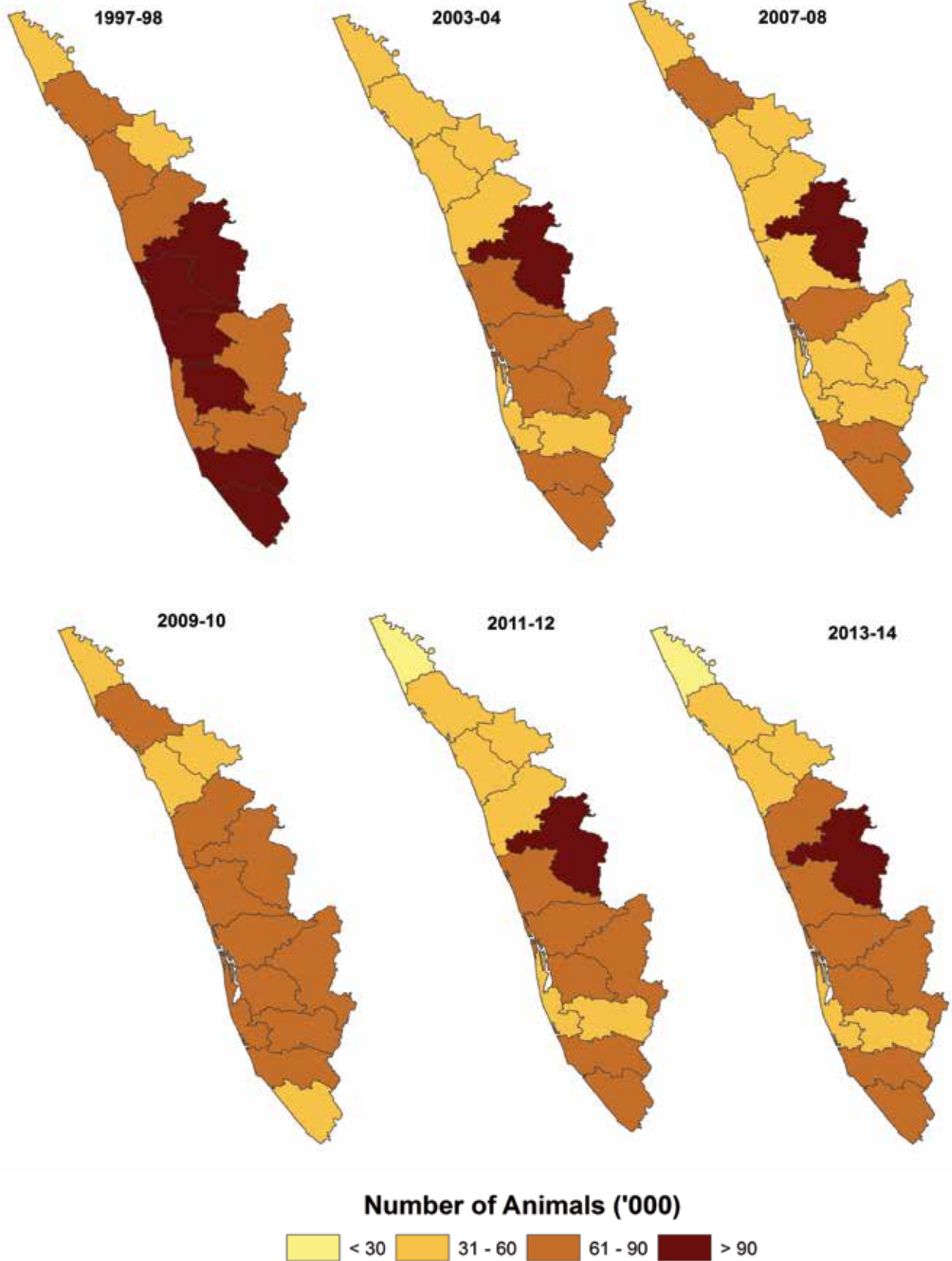
Districts	In-milk Bovine Population ('000)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	1,248.8	1,182.9	883.9	810.5	820.5	870.7	808.1	815.8	845.8	854.0
Alappuzha		71.1	44.0	44.0	45.5	61.9	47.3	48.6	52.1	52.6
Ernakulam	122.7	107.0	78.2	74.2	74.3	79.1	67.8	68.7	71.6	72.4
Idukki		74.3	61.3	57.0	57.3	80.4	62.7	61.8	65.0	65.7
Kannur	94.5	78.9	55.8	54.5	64.2	62.4	48.0	49.8	52.3	52.9
Kasaragod		52.6	44.0	39.1	41.1	36.1	24.7	20.9	20.6	21.6
Kollam		110.9	72.7	71.7	66.3	72.1	70.8	71.0	71.8	72.2
Kottayam	100.7	90.9	67.1	55.7	56.2	71.6	67.6	68.4	68.9	69.5
Kozhikode		73.5	58.0	57.2	57.4	48.2	33.6	34.2	37.4	38.1
Malappuram		74.4	59.9	49.7	54.7	61.8	50.6	50.4	61.2	61.4
Palakkad		121.9	100.2	91.2	91.9	79.1	122.0	123.5	125.5	125.3
Pathanamthitta		71.3	47.7	46.8	45.3	64.0	54.2	55.0	55.3	56.1
Thiruvananthapuram	126.8	114.8	81.9	72.3	69.7	51.5	69.1	70.0	67.0	67.7
Thrissur		97.0	80.7	57.4	59.7	63.2	59.4	60.2	62.7	63.1
Wayanad		44.3	32.4	39.5	37.0	39.6	30.3	33.3	35.0	35.6

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.

*NOTE: For 1992-93, Estimation was reported only for 4 Districts and the State as a whole.



District-wise In-milk Bovine Population





IV.1. Production Performance: Animal Population

TABLE IV.1.3: Year and District-wise In-milk Indigenous Cattle Population

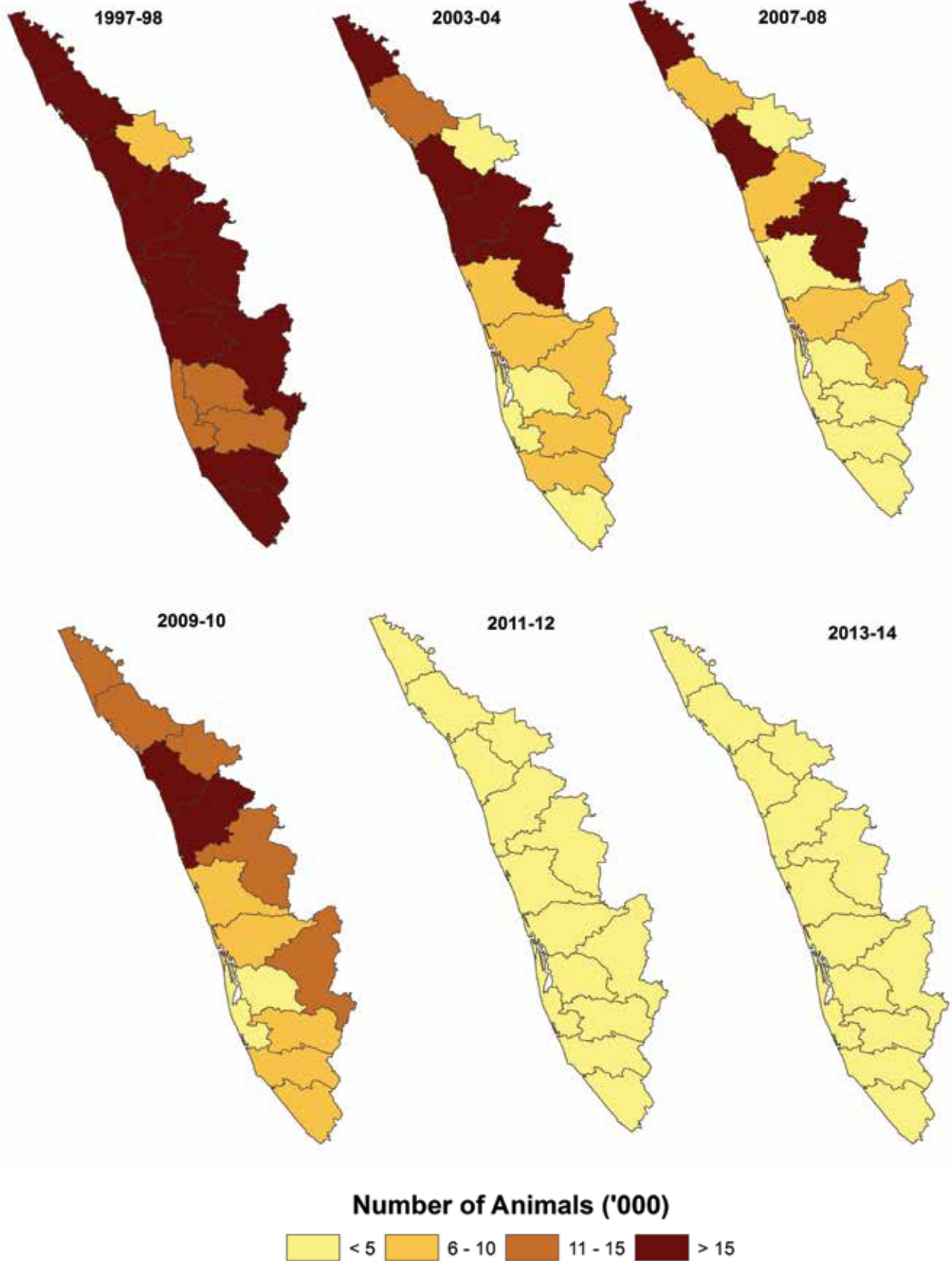
Districts	In-milk Indigenous Cattle Population ('000)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	476.4	310.5	142.8	102.4	101.3	136.5	30.2	26.6	11.5	9.7
Alappuzha		12.8	2.1	1.4	1.2	4.8	1.6	1.6	0.6	0.5
Ernakulam	42.0	23.5	8.4	5.7	6.2	8.8	2.0	1.5	0.6	0.5
Idukki		17.8	9.0	6.7	6.6	10.6	1.8	1.4	0.8	0.8
Kannur	52.7	27.0	12.6	8.4	8.5	11.1	1.9	2.0	0.8	0.7
Kasaragod		31.7	23.9	20.5	20.5	13.1	2.2	1.9	0.4	0.5
Kollam		23.1	5.3	2.8	2.6	6.8	1.0	1.1	1.0	0.7
Kottayam	17.0	12.9	2.9	1.3	1.0	2.6	1.6	1.8	1.0	0.8
Kozhikode		33.2	17.9	17.2	17.3	15.1	2.2	1.8	0.8	0.5
Malappuram		24.9	16.5	10.1	9.7	16.3	3.7	3.1	1.2	0.7
Palakkad		39.2	21.4	15.2	16.0	10.4	4.6	3.5	1.2	1.0
Pathanamthitta		14.6	6.1	3.3	3.5	7.9	2.7	2.0	0.9	0.8
Thiruvananthapuram	20.0	18.5	4.0	1.7	1.2	6.5	0.8	1.1	1.1	0.9
Thrissur		22.1	8.3	4.0	3.3	8.7	2.0	1.9	1.1	0.7
Wayanad		9.2	4.4	4.0	3.8	13.9	2.1	1.9	0.5	0.5

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.

*NOTE: For 1992-93, Estimation was reported only for 4 Districts and the State as a whole.



District-wise In-milk Indigenous Cattle Population





IV.1. Production Performance: Animal Population

TABLE IV.1.4: Year and District-wise in In-milk Crossbred Cattle Population

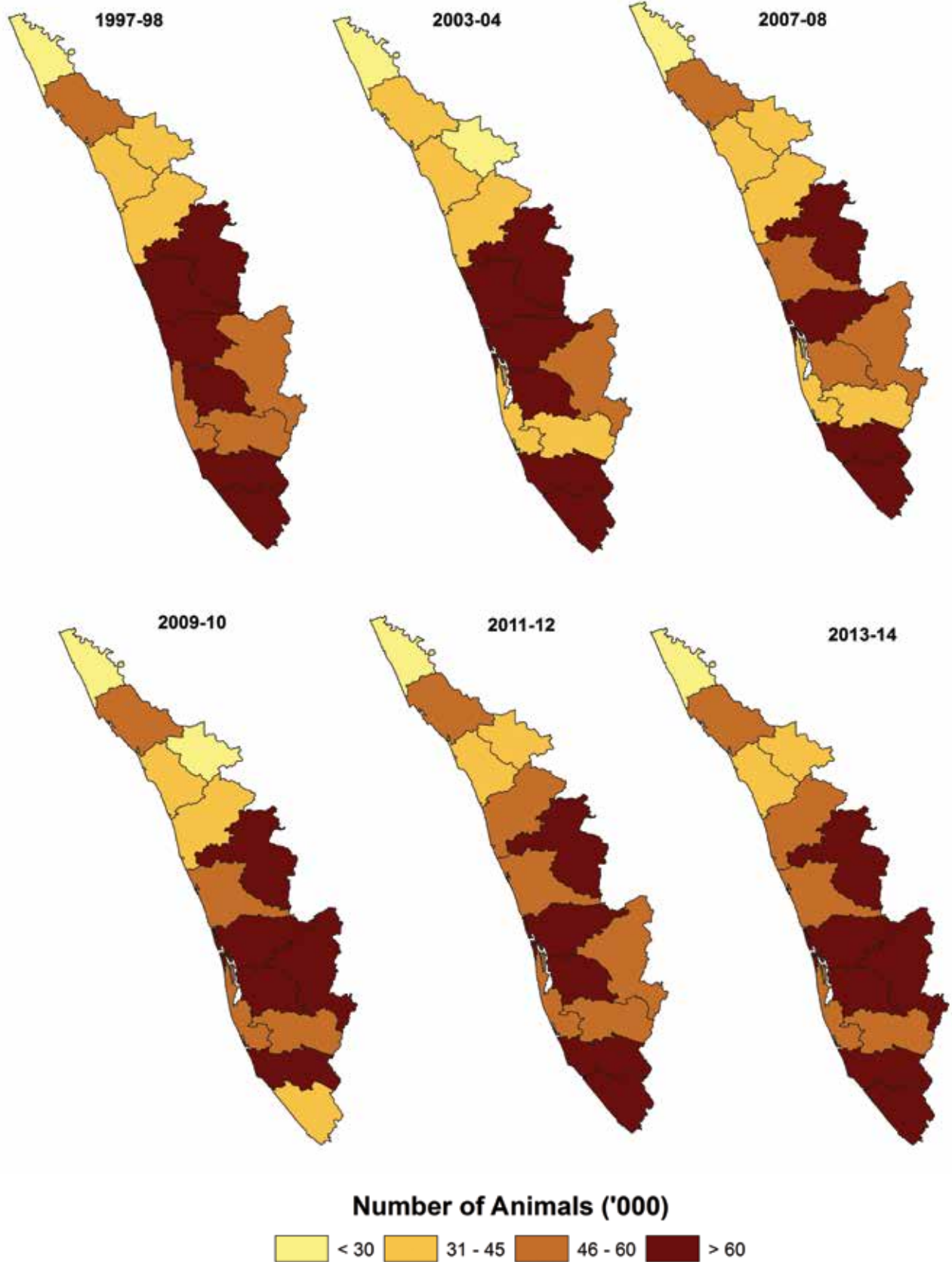
Districts	In-milk Crossbred Cattle Population ('000)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	688.7	834.6	723.6	695.0	706.9	713.5	762.4	776.0	793.6	795.8
Alappuzha		57.2	41.1	41.8	43.6	56.5	45.0	46.4	49.0	49.1
Ernakulam	74.9	81.1	68.2	67.2	66.0	67.5	64.7	66.4	68.1	68.4
Idukki		52.5	50.8	49.6	49.9	68.5	60.0	59.9	62.5	62.6
Kannur	37.2	51.0	42.8	45.8	55.2	51.2	46.1	47.3	49.4	49.6
Kasaragod		19.5	19.3	18.0	20.0	22.5	22.1	18.6	18.8	19.1
Kollam		85.0	66.6	68.0	63.0	64.3	69.2	69.3	67.9	68.2
Kottayam	81.4	76.7	62.9	53.9	54.6	65.4	62.8	63.6	63.8	64.0
Kozhikode		40.1	39.6	39.7	39.9	32.7	31.2	32.1	34.0	34.3
Malappuram		44.3	41.0	37.6	43.3	42.5	45.2	46.6	55.8	55.9
Palakkad		76.1	76.5	74.3	74.8	66.2	115.6	118.3	118.9	118.6
Pathanamthitta		56.2	41.1	43.0	41.6	55.6	51.4	52.7	52.2	52.4
Thiruvananthapuram	91.2	90.9	76.7	69.6	67.7	43.7	67.2	67.8	63.4	63.6
Thrissur		69.9	69.4	51.3	54.5	51.4	53.9	55.7	57.2	57.4
Wayanad		34.1	27.6	35.1	32.8	25.6	28.1	31.3	32.6	32.7

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.

*NOTE: For 1992-93, Estimation was reported only for 4 Districts and the State as a whole.



District-wise In-milk Crossbred Cattle Population





IV.1. Production Performance: Animal Population

TABLE IV.1.5: Year and District-wise In-milk Buffalo Population

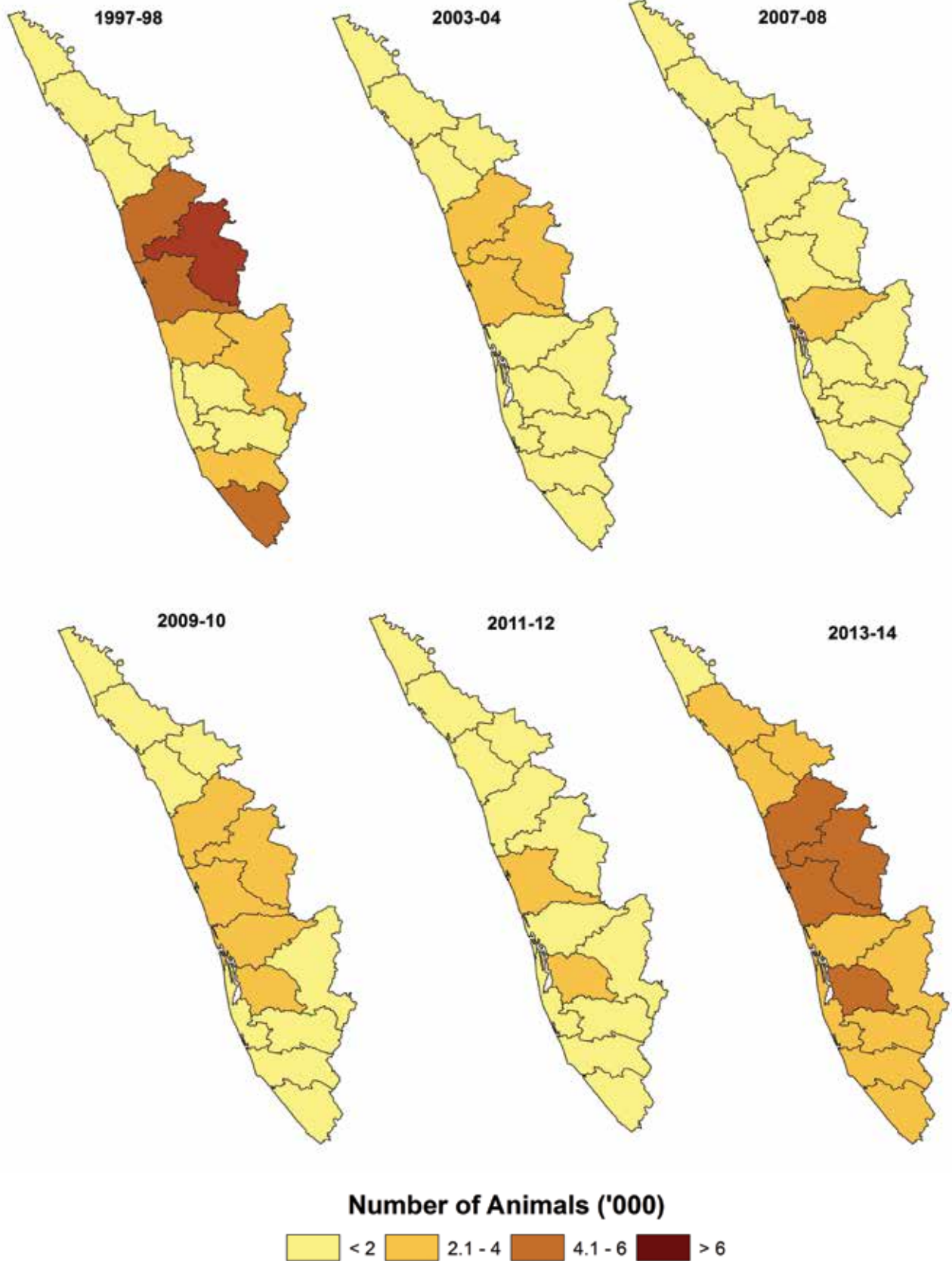
Districts	In-milk Buffalo Population ('000)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	83.7	37.8	17.5	13.1	12.3	20.7	15.5	13.2	40.7	48.5
Alappuzha		1.1	0.8	0.8	0.7	0.6	0.7	0.6	2.5	3.0
Ernakulam	5.8	2.4	1.6	1.3	2.1	2.8	1.1	0.8	2.9	3.5
Idukki		4.0	1.5	0.7	0.8	1.3	0.9	0.5	1.7	2.3
Kannur	4.6	0.9	0.4	0.3	0.5	0.1	0.0	0.5	2.1	2.6
Kasaragod		1.4	0.8	0.6	0.6	0.5	0.4	0.4	1.4	2.0
Kollam		2.8	0.8	0.9	0.7	1.0	0.6	0.6	2.9	3.3
Kottayam	2.3	1.3	1.3	0.5	0.6	3.6	3.2	3.0	4.1	4.7
Kozhikode		0.2	0.5	0.3	0.2	0.4	0.2	0.3	2.6	3.3
Malappuram		5.2	2.4	2.0	1.7	3.0	1.7	0.7	4.2	4.8
Palakkad		6.6	2.3	1.7	1.1	2.5	1.8	1.7	5.4	5.7
Pathanamthitta		0.5	0.5	0.5	0.2	0.5	0.1	0.3	2.2	2.9
Thiruvananthapuram	15.6	5.4	1.2	1.0	0.8	1.3	1.1	1.1	2.5	3.2
Thrissur		5.0	3.0	2.1	1.9	3.1	3.5	2.6	4.4	5.0
Wayanad		1.0	0.4	0.4	0.4	0.1	0.1	0.1	1.9	2.4

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.

*NOTE: For 1992-93, Estimation was reported only for 4 Districts and the State as a whole.



District-wise In-milk Buffalo Population





IV.2. Production Performance: Milk Yield

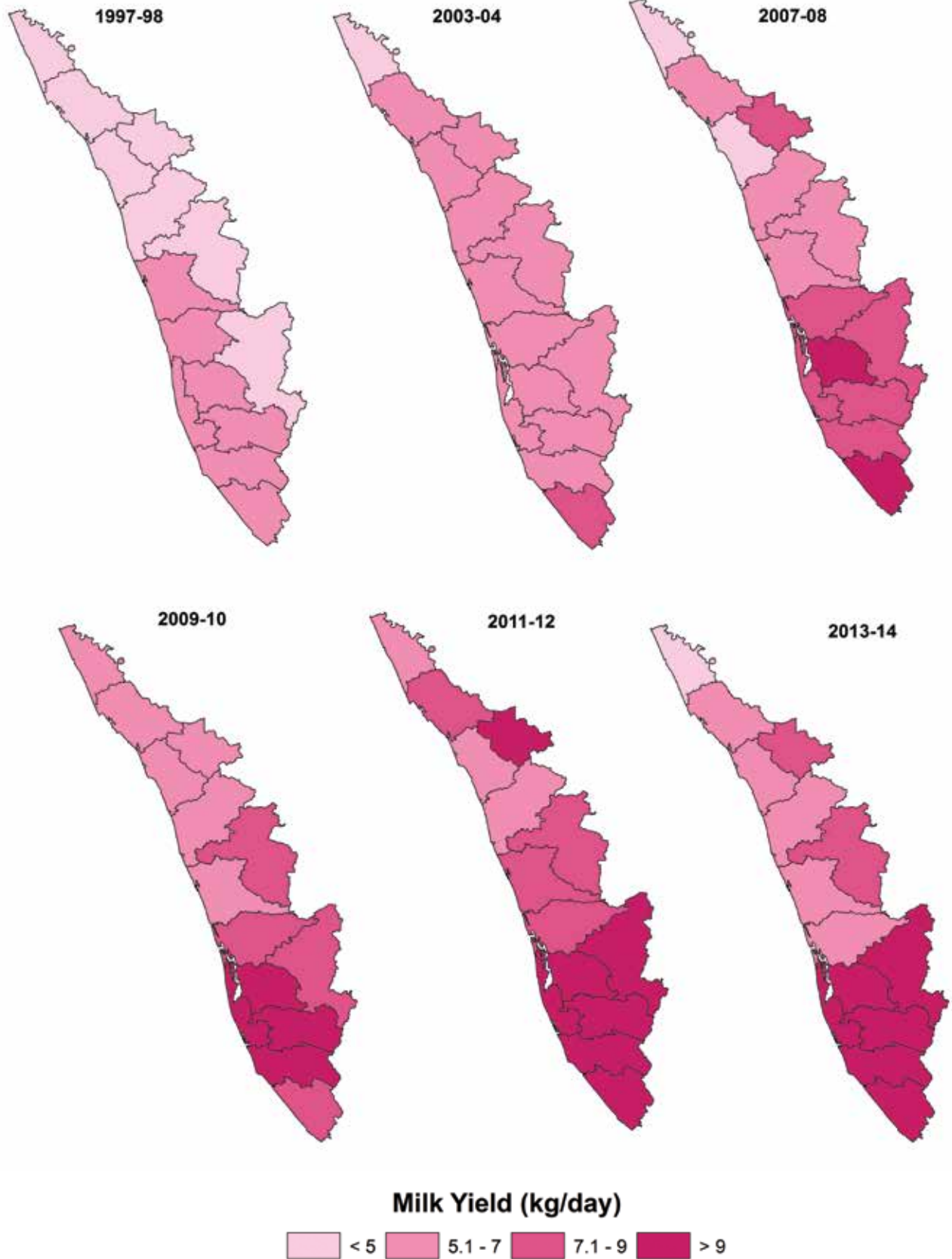
TABLE IV.2.1: Year & District-wise Bovine Milk Yield

Districts	Bovine Milk Yield (kg/day)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	3.910	5.146	6.299	6.873	7.180	7.585	8.589	8.763	8.701	8.154
Alappuzha		5.337	6.936	7.590	8.707	10.056	7.269	10.378	10.370	9.704
Ernakulam	4.310	5.613	6.639	6.967	7.209	7.021	7.754	7.270	7.439	6.891
Idukki		4.735	5.931	6.460	7.143	7.895	11.190	10.507	10.714	10.079
Kannur	2.960	4.670	5.700	6.037	6.026	5.449	7.780	7.680	7.522	6.733
Kasaragod		3.557	4.527	4.653	4.386	6.937	6.633	6.830	6.849	4.807
Kollam		5.455	6.783	7.233	7.897	10.636	9.740	10.496	10.467	9.957
Kottayam	4.120	5.603	6.831	9.213	10.262	9.314	9.893	10.282	10.164	9.512
Kozhikode		4.503	5.744	5.743	4.682	5.246	8.097	6.977	7.230	6.285
Malappuram		4.890	5.731	6.102	5.014	5.156	6.573	5.365	5.636	5.011
Palakkad		4.709	5.920	6.261	6.377	7.329	7.182	8.539	8.333	8.046
Pathanamthitta		5.722	6.496	7.710	8.697	9.054	9.169	10.002	9.790	9.059
Thiruvananthapuram	5.070	5.845	7.122	7.950	9.721	7.017	10.118	11.339	10.693	10.093
Thrissur		5.350	6.814	6.926	6.870	6.728	7.859	7.464	7.127	6.539
Wayanad		4.985	6.046	6.894	7.427	6.317	10.878	9.420	9.401	8.211

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.



District-wise In-milk Bovine Milk Yield





IV.2. Production Performance: Milk Yield

TABLE IV. 2.2: Year and District-wise Indigenous Cattle Milk Yield

Districts	Indigenous Cattle Milk Yield (kg/day)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	1.863	2.282	2.608	2.630	2.652	2.681	2.088	1.849	2.030	0.589
Alappuzha		2.062	2.139	2.174	2.926	2.108	1.787	1.720	1.555	0.507
Ernakulam	1.883	2.235	2.226	3.195	4.379	2.205	1.527	1.645	1.691	0.608
Idukki		2.050	2.257	2.731	1.915	2.683	1.614	1.617	2.174	0.462
Kannur	2.018	2.479	2.868	2.776	3.614	2.733	2.372	2.151	2.221	0.620
Kasaragod		2.544	2.744	2.687	2.487	2.784	2.538	2.044	2.032	0.757
Kollam		2.080	2.170	2.260	1.430	2.648	2.084	2.018	1.809	0.343
Kottayam	1.916	2.221	2.220	2.557	3.320	2.533	1.914	1.881	1.751	0.594
Kozhikode		2.426	2.821	2.924	1.811	3.039	1.660	1.760	1.618	0.653
Malappuram		2.512	2.899	2.659	2.470	2.537	1.459	1.226	2.270	0.758
Palakkad		2.290	2.705	1.948	2.733	2.974	2.805	1.354	1.922	0.632
Pathanamthitta		2.032	2.181	2.829	3.487	2.548	2.027	1.797	1.562	0.356
Thiruvananthapuram	2.002	2.015	2.185	2.369	3.230	3.344	3.078	2.874	1.649	0.441
Thrissur		2.180	2.229	2.280	2.747	3.017	2.633	2.313	2.213	0.779
Wayanad		2.270	2.849	3.037	3.137	2.440	1.738	1.745	2.053	0.718

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.



District-wise Indigenous Cattle Milk Yield





IV.2. Production Performance: Milk Yield

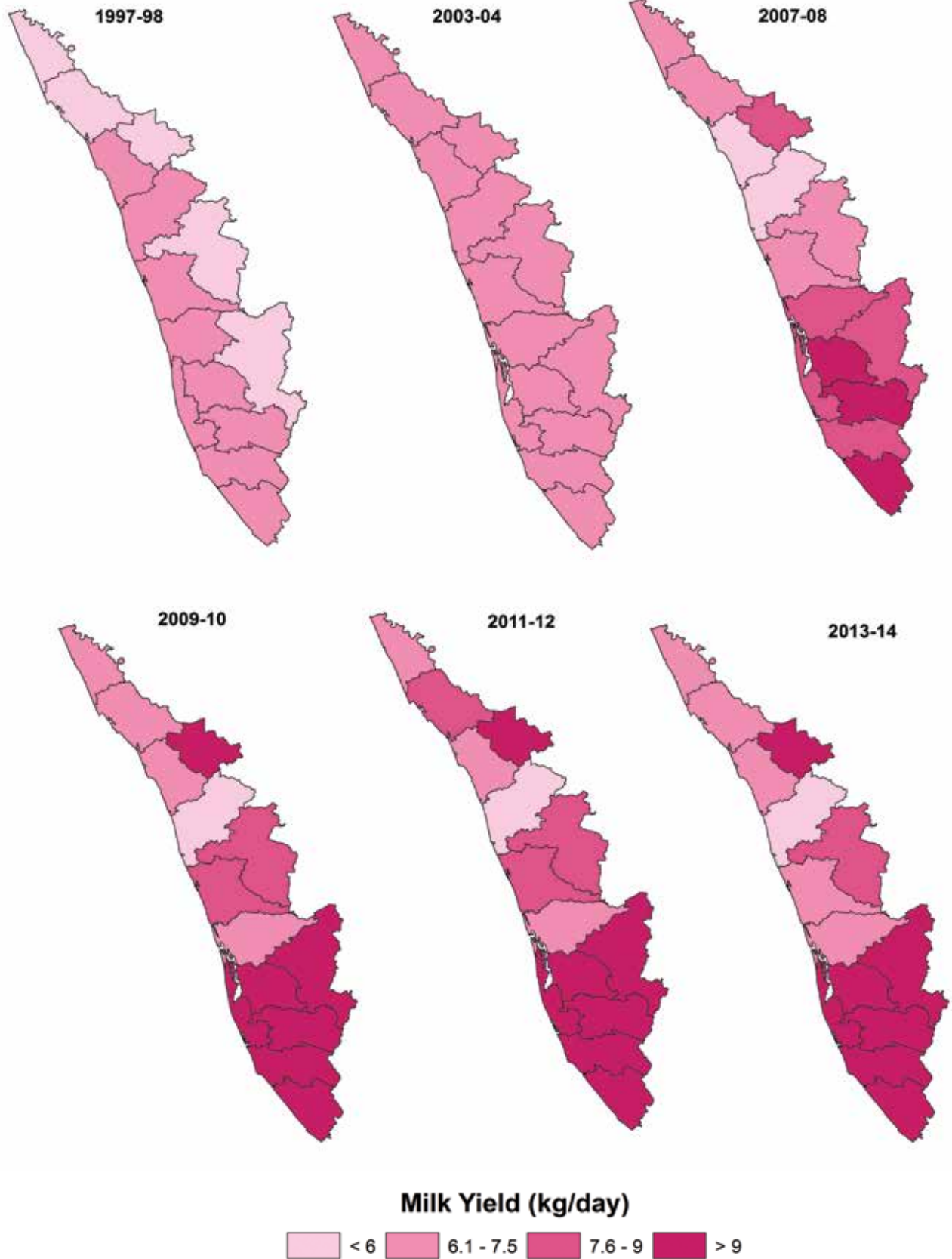
TABLE IV.2.3: Year and District-wise Crossbred Cattle Milk Yield

Districts	Crossbred Cattle Milk Yield (kg/day)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	5.372	6.201	7.007	7.508	7.849	8.581	8.921	9.029	9.114	8.545
Alappuzha		6.103	7.158	7.777	8.912	10.515	7.250	10.701	10.915	10.345
Ernakulam	5.643	6.580	7.186	7.298	7.514	7.389	7.895	7.354	7.688	7.118
Idukki		5.592	6.557	6.946	7.823	9.634	11.636	10.697	11.033	10.463
Kannur	4.220	5.796	6.535	6.633	6.368	6.314	7.485	7.893	7.800	7.230
Kasaragod		5.002	6.609	6.917	6.317	6.754	7.493	7.323	7.290	6.727
Kollam		6.367	7.137	7.441	8.146	10.133	10.079	10.634	10.937	10.367
Kottayam	4.592	6.188	7.024	9.403	10.400	10.652	10.385	10.810	10.776	10.207
Kozhikode		6.211	7.011	6.952	5.861	6.782	8.905	7.243	7.743	7.173
Malappuram		6.118	6.821	6.961	5.578	5.547	7.232	5.619	5.929	5.359
Palakkad		5.957	6.777	7.153	7.160	8.480	8.204	8.763	8.596	8.023
Pathanamthitta		6.673	7.125	8.107	9.136	9.285	9.308	10.303	10.213	9.645
Thiruvananthapuram	5.934	6.659	7.384	8.131	9.838	11.139	10.791	11.540	11.173	10.604
Thrissur		6.330	7.381	7.340	7.051	7.673	7.743	7.641	7.624	7.056
Wayanad		5.667	6.565	7.300	7.885	9.832	10.487	9.879	9.876	9.306

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.



District-wise Crossbred Cattle Milk Yield





IV.2. Production Performance: Milk Yield

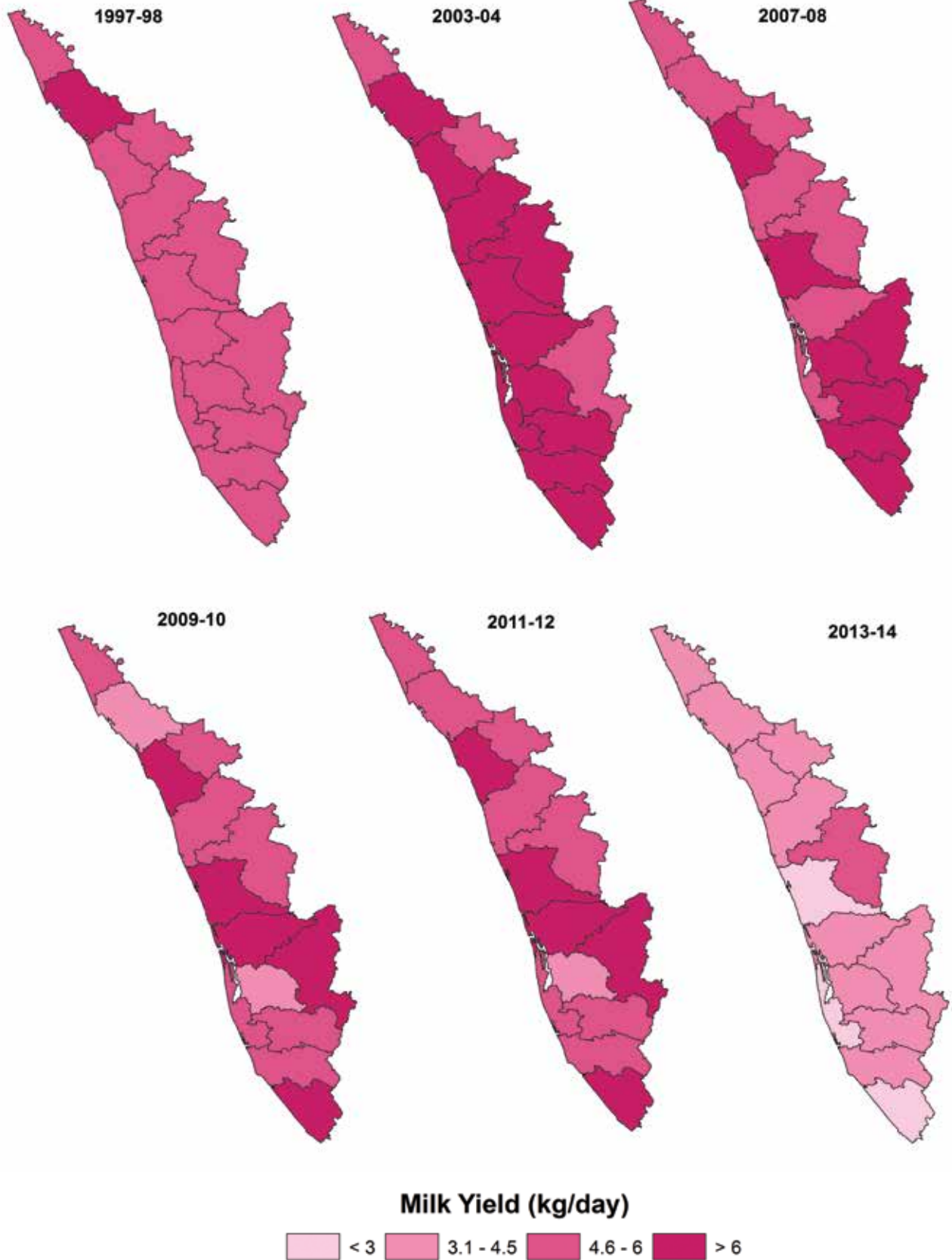
TABLE IV.2.4: Year and District-wise Buffalo Milk Yield

Districts	Buffalo Milk Yield (kg/day)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	3.574	5.367	6.212	6.254	6.084	5.855	3.759	5.677	2.534	3.282
Alappuzha		4.727	6.106	6.141	5.527	4.580	3.967	4.971	2.149	2.884
Ernakulam	4.504	5.723	6.313	6.153	5.833	8.367	3.103	7.812	2.818	3.553
Idukki		5.550	5.923	6.330	6.302	7.024	4.561	6.151	2.560	3.295
Kannur	3.356	6.334	6.094	5.993	5.753	4.497	4.890	5.586	2.612	3.347
Kasaragod		5.716	5.830	5.583	5.240	5.667	2.708	5.412	2.302	3.039
Kollam		5.163	6.201	6.340	6.310	4.978	2.558	5.452	2.444	3.179
Kottayam	3.692	4.960	6.064	6.437	6.547	3.017	2.567	3.264	2.573	3.308
Kozhikode		5.912	6.243	6.139	6.658	7.833	5.017	7.169	2.275	3.010
Malappuram		5.780	6.604	6.922	5.473	5.347	3.683	5.093	2.525	3.260
Palakkad		4.854	6.261	6.003	4.529	4.665	3.853	4.968	3.976	4.711
Pathanamthitta		5.902	6.276	6.188	6.049	4.917	4.277	4.863	2.526	3.261
Thiruvananthapuram	3.960	5.248	6.038	6.318	6.602	7.767	4.167	6.237	2.027	2.762
Thrissur		5.394	6.267	6.240	7.665	8.017	4.203	6.870	2.191	2.926
Wayanad		5.583	5.858	5.482	5.945	5.300	3.080	5.635	2.492	3.227

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.



District-wise Buffalo Milk Yield





IV.3. Production Performance: Milk Production

TABLE IV.3.1: Year & District-wise Total Milk Production (Bovine and Goat)

Districts	Total Milk Production ('000 MT)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	1,889.7	2,343.1	2,110.9	2,119.3	2,247.3	2,536.8	2,643.5	2,716.7	2,791.6	2,653.8
Alappuzha	124.6	145.2	114.9	126.2	149	234	130.8	190.1	203.6	194.7
Ernakulam	203	230.9	196.6	197.7	206.6	209	199.7	192.5	204.6	191.3
Idukki	114	134.7	137.1	140.9	157.9	239.3	264.3	242.9	260.8	248.2
Kannur	107.1	140.8	119.3	123.1	143.9	129.1	142.2	145.4	149.4	137
Kasaragod	43.3	71	74.4	68.4	67.9	93.4	61.1	53.6	53.3	40.7
Kollam	190.9	237.2	187.9	200.2	202.1	289.7	261.7	279.8	282.4	269.7
Kottayam	158.5	194.7	174.4	196.3	227.3	273.3	267.8	275.2	266.2	251.9
Kozhikode	103.3	128.1	126.3	123.7	99.9	94.5	101.6	90	101.9	93.1
Malappuram	109.2	142.8	133.6	118.3	104.1	125.3	124.9	106.6	135	121.4
Palakkad	146.1	219.7	223.8	212.8	217.6	212.9	324.3	391.8	388.1	374.4
Pathanamthitta	117.2	152.5	116.6	136.5	149.8	219.7	192.3	211.9	209.4	197.3
Thiruvananthapuram	254.3	266.1	224.6	222.9	264.1	159.3	273.2	304.5	276.5	264.4
Thrissur	162.9	197.5	207.4	150.6	155.3	164.2	177.3	171.1	170.7	158.2
Wayanad	54.4	83.2	73.2	101.9	102.7	93.2	122.1	116.5	122.2	111.6

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.





IV.3. Production Performance: Milk Production

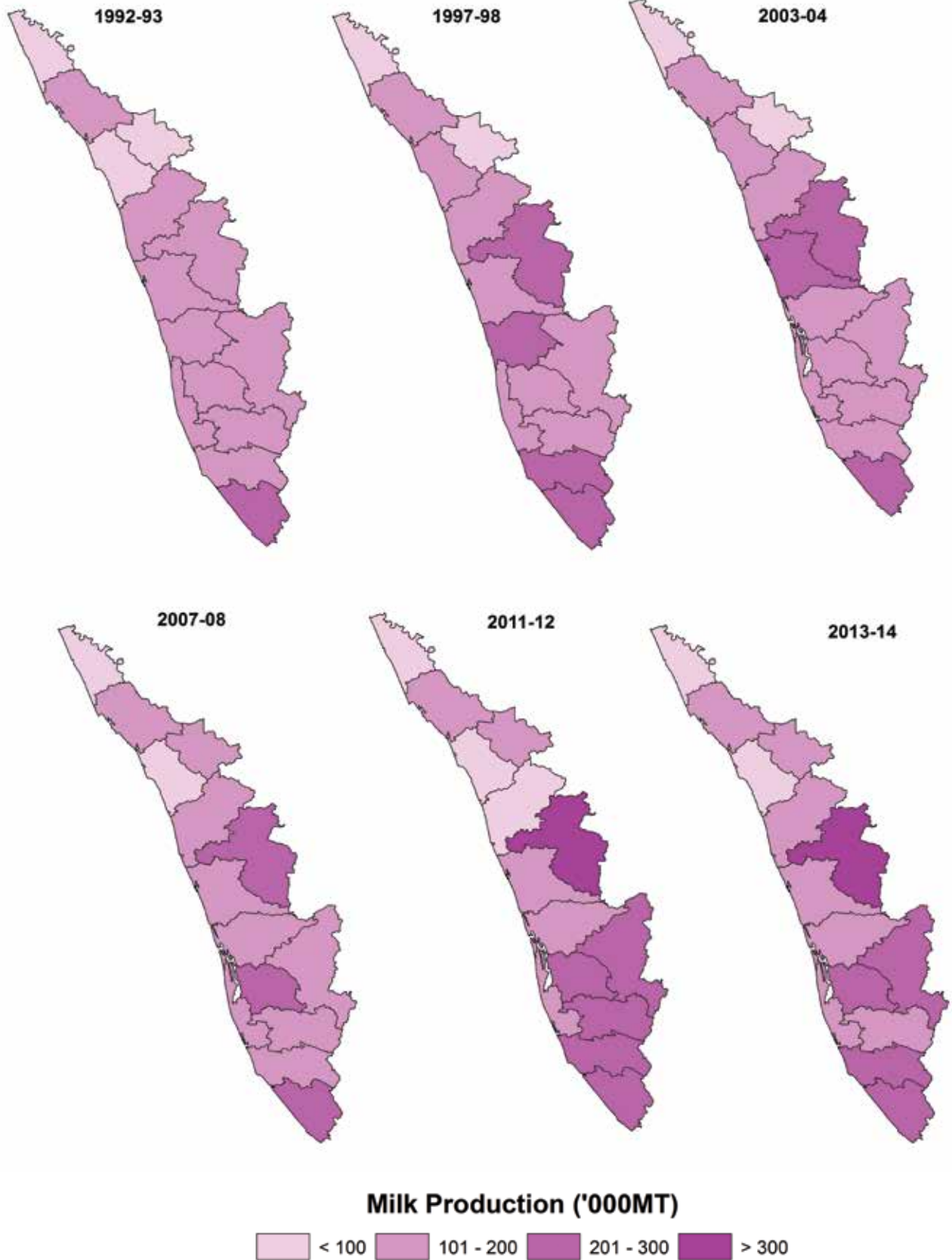
TABLE IV.3.2: Year & District-wise Bovine Milk Production

Districts	Bovine Milk Production ('000 MT)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	1,784.4	2,221.7	2,032.1	2,033.2	2,150.4	2,410.5	2,533.4	2,609.4	2,686.1	2,541.7
Alappuzha	118.8	138.5	111.4	121.9	144.6	227.2	125.5	184.1	197.2	186.3
Ernakulam	192.7	219.2	189.5	188.7	195.5	202.7	191.9	182.3	194.4	182.1
Idukki	108.8	128.4	132.7	134.4	149.4	231.7	256.1	237	254.2	241.7
Kannur	101.5	134.5	116.1	120.1	141.2	124.1	136.3	139.6	143.6	130
Kasaragod	41	68.3	72.7	66.4	65.8	91.4	59.8	52.1	51.5	37.9
Kollam	176.1	220.8	180	189.3	191.1	279.9	251.7	272	274.3	262.4
Kottayam	151	185.9	167.3	187.3	210.5	243.4	244.1	256.7	255.6	241.3
Kozhikode	96.9	120.8	121.6	119.9	98.1	92.3	99.3	87.1	98.7	87.4
Malappuram	100.9	132.8	125.3	110.7	100.1	116.3	121.4	98.7	125.9	112.3
Palakkad	137.2	209.5	216.5	208.4	213.9	211.6	319.8	384.9	381.7	368
Pathanamthitta	114.4	148.9	113.1	131.7	143.8	211.5	181.4	200.8	197.6	185.5
Thiruvananthapuram	235.2	244.9	212.9	209.8	247.3	131.9	255.2	289.7	261.5	249.4
Thrissur	156	189.4	200.7	145.1	149.7	155.2	170.4	164	163.1	150.6
Wayanad	52.8	80.6	71.5	99.4	100.3	91.3	120.3	114.5	120.1	106.7

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.



District-wise Bovine Milk Production





IV.3. Production Performance: Milk Production

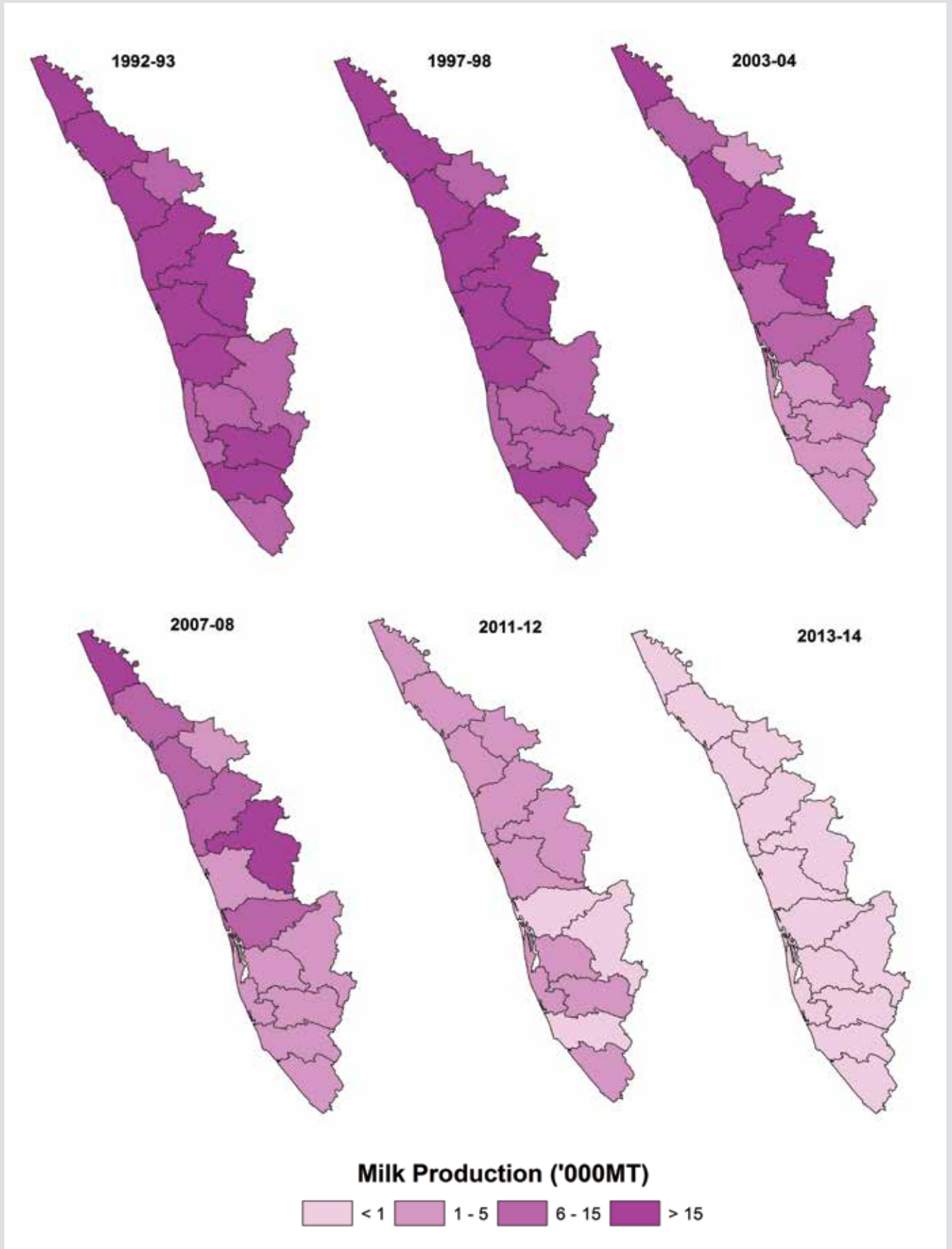
TABLE IV.3.3: Year and District-wise Indigenous Cattle Milk Production

Districts	Indigenous Cattle Milk Production ('000 MT)								
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2011-12	2012-13	2013-14
KERALA	324.1	258.6	136.3	98.3	98.0	132.0	18.0	8.5	2.1
Alappuzha	13.9	9.6	1.6	1.1	1.2	1.4	1.0	0.3	0.1
Ernakulam	29.2	19.2	6.8	6.7	10.0	5.5	0.9	0.4	0.1
Idukki	13.1	13.3	7.4	6.7	4.6	6.2	0.8	0.6	0.2
Kannur	38.8	24.4	13.2	8.5	11.2	7.6	1.6	0.6	0.2
Kasaragod	23.7	29.4	24.0	20.1	18.7	32.8	1.4	0.3	0.1
Kollam	23.2	17.5	4.2	2.3	1.4	2.8	0.8	0.7	0.1
Kottayam	11.9	10.5	2.4	1.2	1.2	1.5	1.2	0.7	0.1
Kozhikode	35.7	29.4	18.5	18.3	11.5	15.1	1.2	0.5	0.1
Malappuram	29.9	22.8	17.5	9.8	8.7	7.6	1.4	1.0	0.2
Palakkad	38.2	32.8	21.2	10.8	16.0	26.1	1.8	0.9	0.2
Pathanamthitta	15.7	10.8	4.9	3.5	4.4	3.0	1.3	0.5	0.2
Thiruvananthapuram	14.6	13.6	3.2	1.5	1.4	5.2	1.1	0.6	0.2
Thrissur	25.8	17.6	6.8	3.3	3.3	14.9	1.6	0.5	0.2
Wayanad	10.4	7.6	4.6	4.5	4.3	2.3	1.2	0.4	0.1

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.



District-wise Indigenous Cattle Milk Production





IV.3. Production Performance: Milk Production

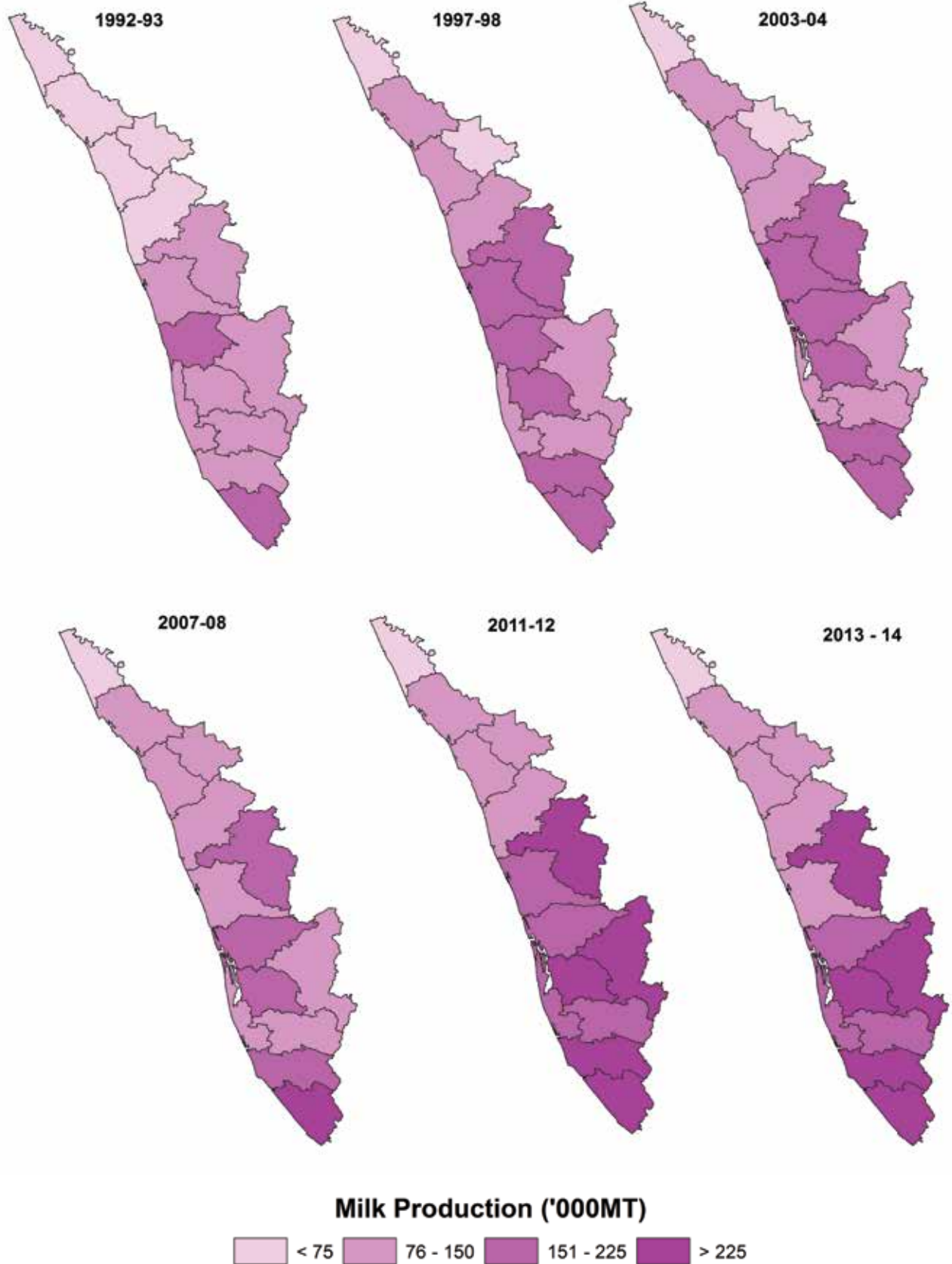
TABLE IV.3.4: Year and District-wise Crossbred Cattle Milk Production

Districts	Crossbred Cattle Milk Production ('000 MT)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	1,351.0	1,889.0	1,856.0	1,905.0	2,025.0	2,234.0	2,408.0	2,564.0	2,640.0	2,481.5
Alappuzha	103.0	127.0	108.0	119.0	142.0	225.0	123.0	182.0	195.0	181.8
Ernakulam	154.0	195.0	179.0	179.0	181.0	187.0	186.0	179.0	191.0	177.4
Idukki	86.0	107.0	122.0	126.0	143.0	222.0	247.0	235.0	252.0	238.3
Kannur	57.0	108.0	102.0	111.0	129.0	116.0	125.0	137.0	141.0	126.1
Kasaragod	13.0	36.0	47.0	45.0	46.0	58.0	49.0	50.0	50.0	36.1
Kollam	148.0	198.0	174.0	185.0	188.0	276.0	246.0	270.0	271.0	257.7
Kottayam	136.0	173.0	162.0	185.0	208.0	238.0	235.0	252.0	251.0	236.7
Kozhikode	58.0	91.0	102.0	101.0	86.0	75.0	91.0	85.0	96.0	83.3
Malappuram	58.0	99.0	102.0	96.0	88.0	103.0	112.0	96.0	121.0	107.1
Palakkad	86.0	165.0	190.0	194.0	196.0	181.0	308.0	380.0	373.0	360.1
Pathanamthitta	97.0	137.0	107.0	127.0	139.0	207.0	174.0	199.0	195.0	181.2
Thiruvananthapuram	198.0	221.0	207.0	206.0	244.0	123.0	249.0	286.0	259.0	246.3
Thrissur	116.0	162.0	187.0	137.0	141.0	134.0	153.0	156.0	159.0	145.5
Wayanad	40.0	71.0	66.0	94.0	95.0	89.0	110.0	113.0	118.0	103.9

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.



District-wise Crossbred Cattle Milk Production





IV.3. Production Performance: Milk Production

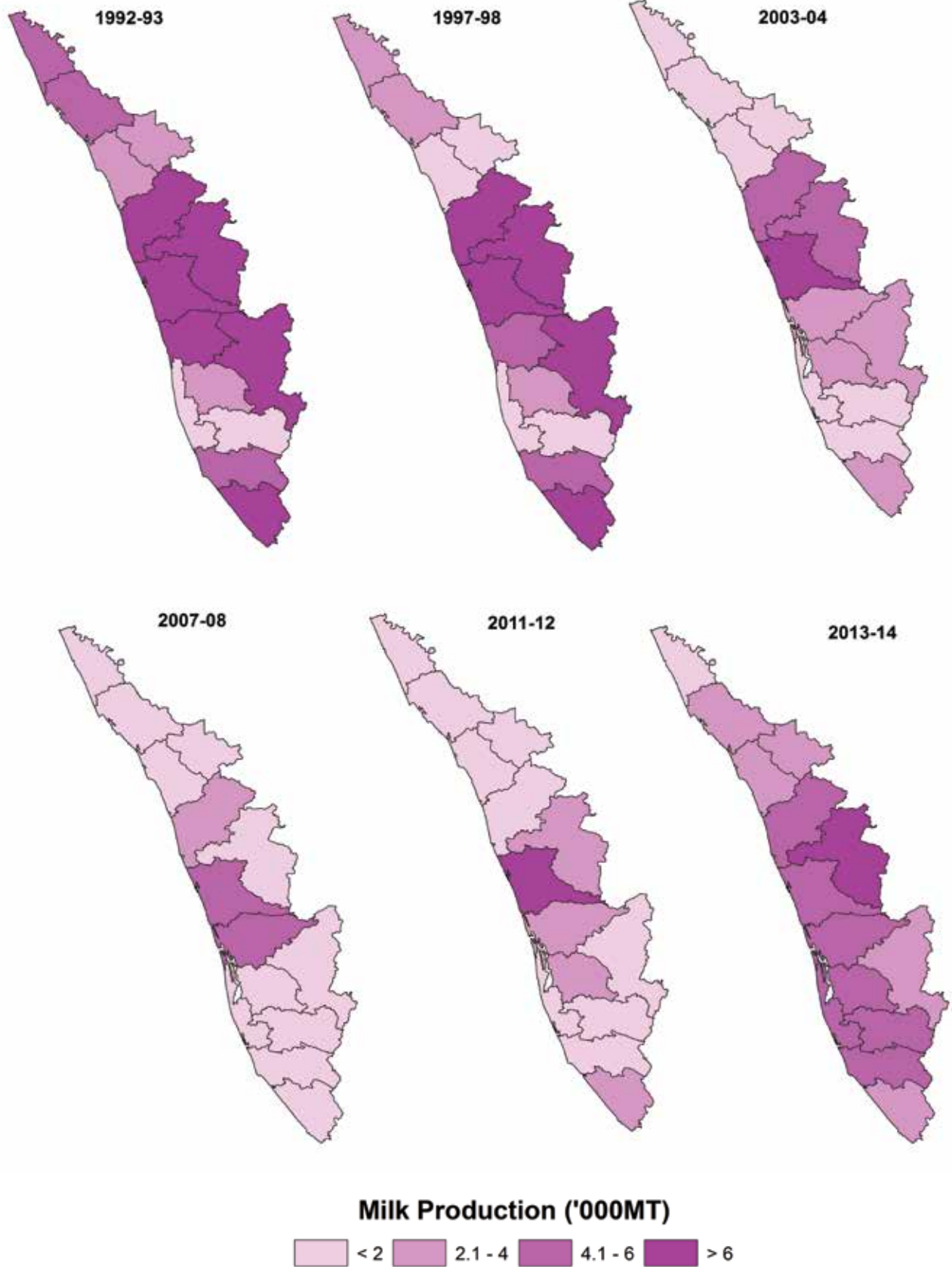
TABLE IV.3.5: Year and District-wise Buffalo Milk Production

Districts	Buffalo Milk Production ('000 MT)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	109.3	74.1	39.8	29.9	27.4	44.5	21.0	27.4	37.6	58.1
Alappuzha	1.9	1.9	1.8	1.8	1.4	0.8	1.3	1.1	1.9	4.4
Ernakulam	9.5	5.0	3.7	3.0	4.5	10.2	1.6	2.4	3.0	4.6
Idukki	9.7	8.1	3.3	1.7	1.8	3.5	2.0	1.2	1.6	3.2
Kannur	5.7	2.1	0.9	0.6	1.0	0.5	0.1	1.0	2.0	3.7
Kasaragod	4.3	2.9	1.7	1.3	1.1	0.6	0.3	0.7	1.2	1.7
Kollam	4.9	5.3	1.8	2.0	1.7	1.1	1.0	1.2	2.6	4.6
Kottayam	3.1	2.4	2.9	1.1	1.3	3.9	3.0	3.5	3.9	4.5
Kozhikode	3.2	0.4	1.1	0.6	0.6	2.2	0.2	0.9	2.2	4.0
Malappuram	13.0	11.0	5.8	4.9	3.4	5.7	1.4	1.3	3.9	5.0
Palakkad	13.0	11.7	5.3	3.6	1.9	4.5	2.9	3.1	7.8	7.7
Pathanamthitta	1.7	1.1	1.2	1.2	0.4	1.5	0.2	0.5	2.1	4.1
Thiruvananthapuram	22.6	10.3	2.7	2.3	1.9	3.7	1.6	2.6	1.9	2.9
Thrissur	14.2	9.8	6.9	4.8	5.4	6.3	5.2	6.4	3.6	4.9
Wayanad	2.4	2.0	0.9	0.9	1.0	0.0	0.1	0.3	1.7	2.7

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.

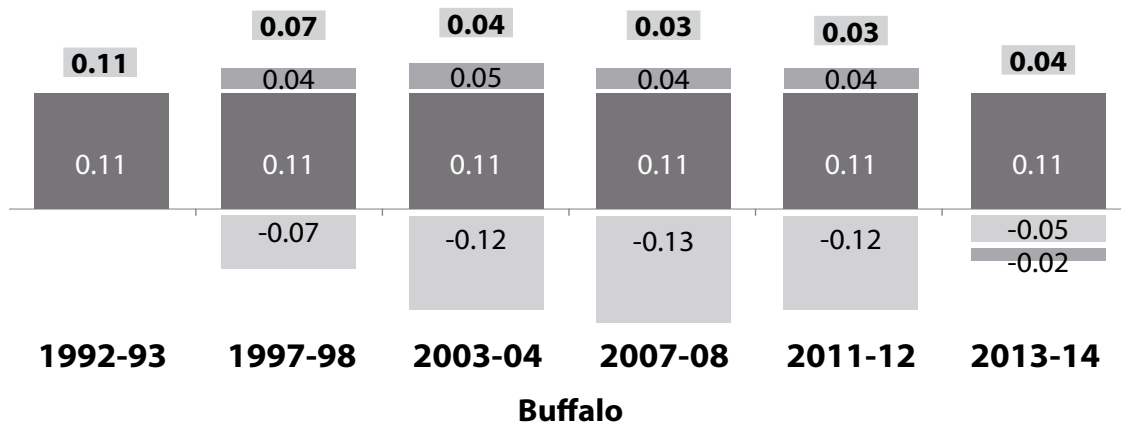
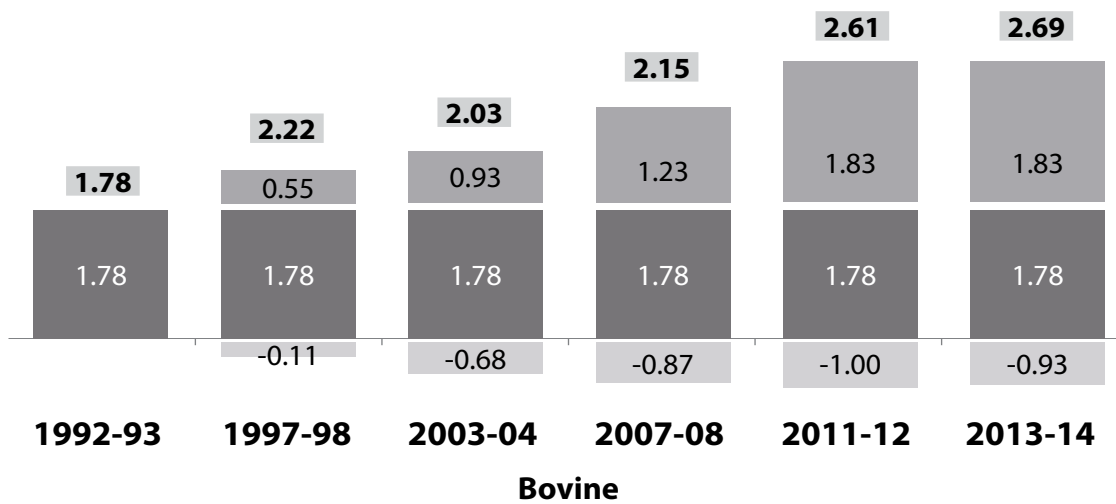


District-wise Buffalo Milk Production



Kerala's Milk Production (MMT)

(Change due to no. of in-milk animals and average yield)

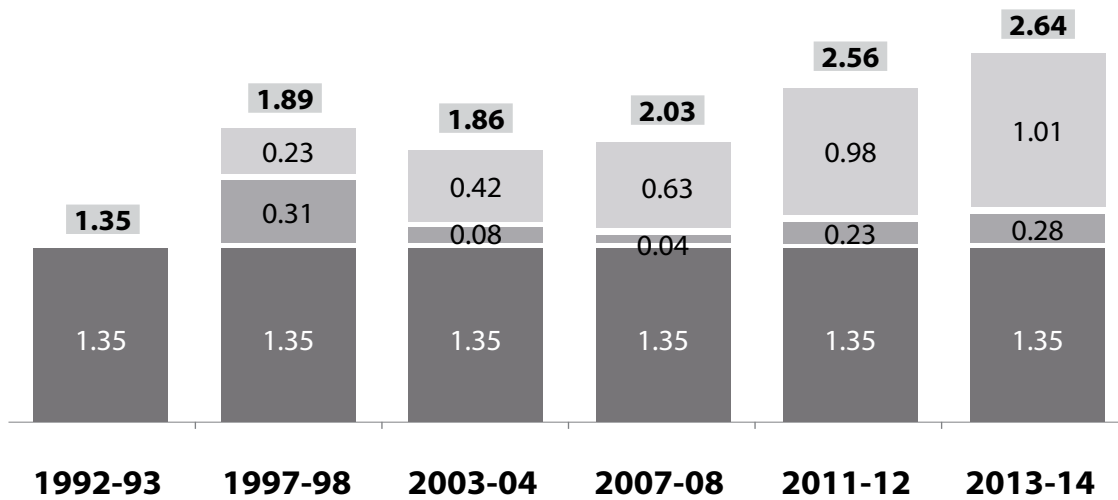


- Milk production in base year - 1992-1993 - MMT
- Total milk production - MMT
- Change in total milk production due to change in average yield - kg/in-milk animal per day - MMT
- Change in total milk production due to change in numbers of in milk animals - MMT

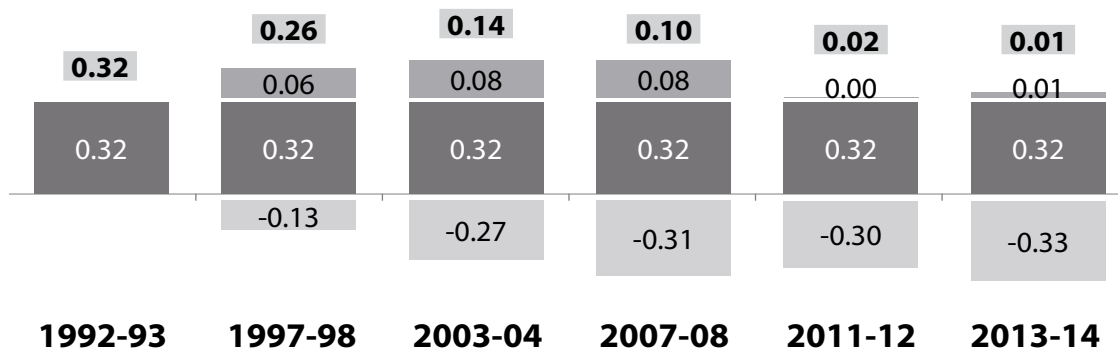


Kerala's Milk Production (MMT)

(Change due to no. of in-milk animals & average yield)



Crossbred Cattle



Indigenous Cattle

- Milk production in base year - 1992-1993 - MMT
- Total milk production - MMT
- Change in total milk production due to change in average yield - kg/in-milk animal per day - MMT
- Change in total milk production due to change in numbers of in milk animals - MMT





IV.3. Production Performance: Milk Production

TABLE IV.3.6: Year & District-wise Goat Milk Production

Districts	Goat Milk Production ('000 MT)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	105.3	121.4	78.8	86.1	96.9	126.3	110.1	107.3	105.5	112.1
Alappuzha	5.8	6.7	3.5	4.3	4.4	6.8	5.3	6.0	6.4	8.4
Ernakulam	10.3	11.7	7.1	9.0	11.1	6.3	7.8	10.2	10.2	9.2
Idukki	5.2	6.3	4.4	6.5	8.5	7.6	8.2	5.9	6.6	6.5
Kannur	5.6	6.3	3.2	3.0	2.7	5.0	5.9	5.8	5.8	7.0
Kasaragod	2.3	2.7	1.7	2.0	2.1	2.0	1.3	1.5	1.8	2.8
Kollam	14.8	16.4	7.9	10.9	11.0	9.8	10.0	7.8	8.1	7.3
Kottayam	7.5	8.8	7.1	9.0	16.8	29.9	23.7	18.5	10.6	10.6
Kozhikode	6.4	7.3	4.7	3.8	1.8	2.2	2.3	2.9	3.2	5.7
Malappuram	8.3	10.0	8.3	7.6	4.0	9.0	3.5	7.9	9.1	9.1
Palakkad	8.9	10.2	7.3	4.4	3.7	1.3	4.5	6.9	6.4	6.4
Pathanamthitta	2.8	3.6	3.5	4.8	6.0	8.2	10.9	11.1	11.8	11.8
Thiruvananthapuram	19.1	21.2	11.7	13.1	16.8	27.4	18.0	14.8	15.0	15.0
Thrissur	6.9	8.1	6.7	5.5	5.6	9.0	6.9	7.1	7.6	7.6
Wayanad	1.6	2.6	1.7	2.5	2.4	1.9	1.8	2.0	2.1	4.9

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.





IV.3. Production Performance: Milk Production

TABLE IV.3.7: Year and District-wise Total Milk Production Density

Districts	Milk Production Density (kg/day/sq km)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	133	165	149	149	158	179	186	192	197	187
Alappuzha	251	293	231	245	290	454	254	369	396	378
Ernakulam	236	269	229	177	186	188	179	172	183	171
Idukki	60	72	73	88	99	150	166	152	163	156
Kannur	99	130	110	113	132	119	131	134	137	126
Kasaragod	61	99	103	95	94	128	85	73	73	56
Kollam	208	258	204	220	222	319	288	308	311	297
Kottayam	198	243	217	244	282	340	333	342	331	314
Kozhikode	122	150	148	144	116	111	118	105	119	109
Malappuram	83	108	101	91	81	97	96	82	104	94
Palakkad	91	137	139	130	133	130	199	239	238	229
Pathanamthitta	119	155	119	141	155	227	199	219	216	204
Thiruvananthapuram	318	333	282	280	330	200	342	382	346	331
Thrissur	149	180	190	137	140	148	160	155	154	143
Wayanad	70	107	95	130	132	120	157	150	157	144

SOURCE: Estimated from Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.



District-wise Milk Production Density





IV.4. Production Performance: Milk Availability

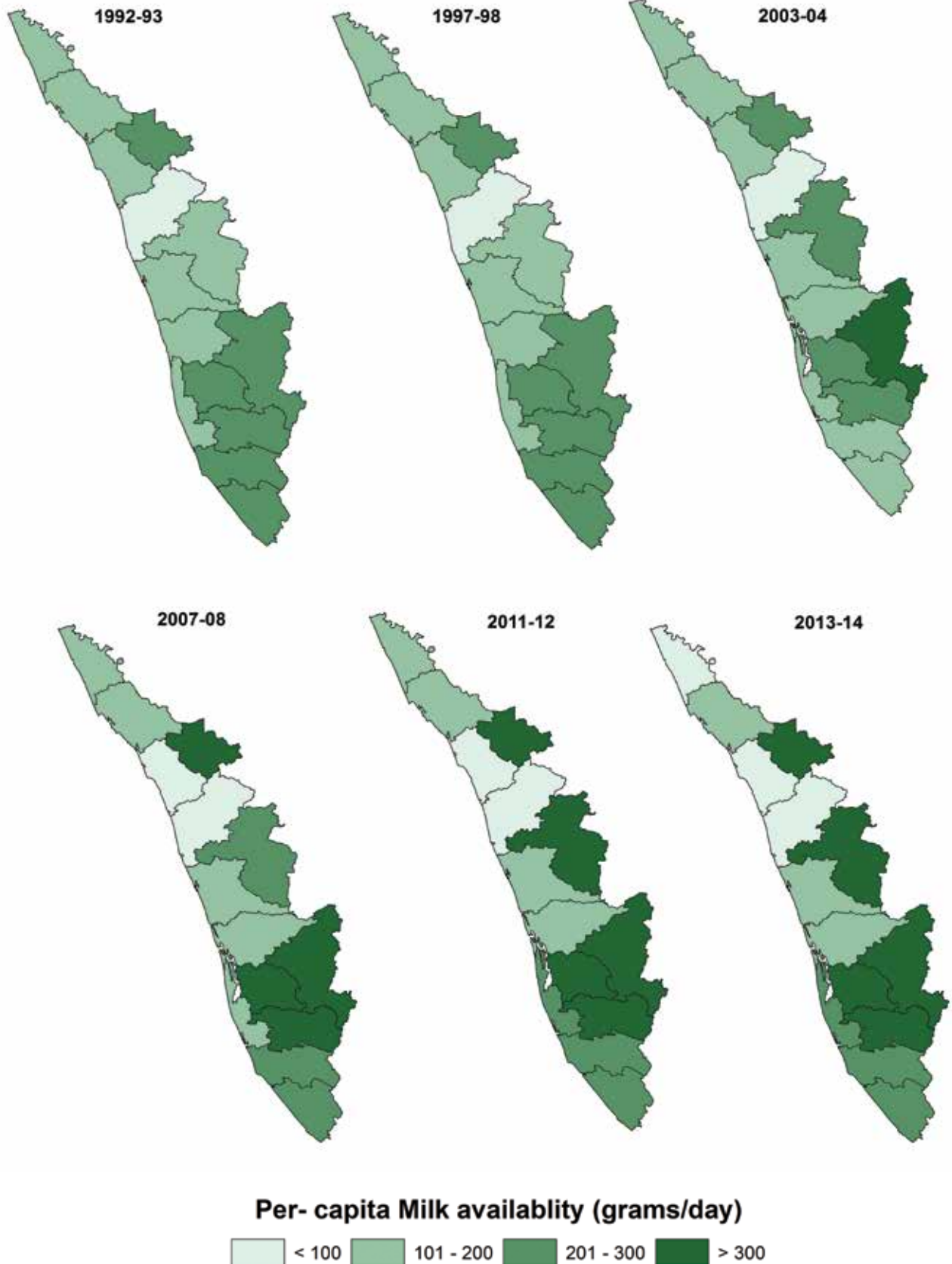
TABLE IV.4.1: Year and District-wise Per Capita Milk Availability

Districts	Per Capita Milk Availability (grams/day)									
	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	176	209	180	178	188	210	218	223	228	216
Alappuzha	170	193	149	163	193	302	169	245	262	250
Ernakulam	196	212	172	170	176	176	168	161	170	158
Idukki	288	333	334	345	387	589	652	600	645	615
Kannur	129	165	134	137	159	141	155	158	161	147
Kasaragod	109	169	167	149	147	199	129	112	111	84
Kollam	216	259	198	210	212	302	273	291	293	279
Kottayam	236	280	244	274	317	380	372	382	369	349
Kozhikode	107	127	119	114	91	85	91	80	90	82
Malappuram	95	115	98	84	73	86	84	71	89	79
Palakkad	166	239	231	215	218	211	318	382	376	360
Pathanamthitta	269	344	260	308	339	500	439	485	481	454
Thiruvananthapuram	234	234	189	187	221	133	227	253	229	219
Thrissur	162	188	189	135	139	146	156	150	149	138
Wayanad	218	310	255	350	351	315	411	390	408	371

SOURCE: Estimated from Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.



District-wise Per Capita Milk Availability





IV.5. Production Performance: Milk Utilisation

TABLE IV.5.1: Milk Utilisation Pattern in Households (1992-93 to 2012-13)

(In Percent)

Category	Parameters	1992-93	1997-98	2003-04	2006-07	2007-08	2009-10	2011-12	2012-13
Total Milk	Quantity Sold	72	73	83	80	76	81	78	79
	Consumed at home and converted into milk products	28	27	17	20	24	19	22	21

SOURCE: Integrated Sample Survey Reports (1992-93 to 2013-14), Directorate of Animal Husbandry, Govt. of Kerala.





PART V : VETERINARY INFRASTRUCTURE AND SERVICE DELIVERY SYSTEM

The improvement in productivity of livestock through cross breeding programmes has increased the susceptibility of various diseases. The Animal Husbandry Department in Kerala provides veterinary care mainly through 14 district veterinary centres, 50 veterinary polyclinics, 213 veterinary hospitals and 869 veterinary dispensaries. It also arranges for emergency veterinary care during odd hours in selected blocks. The Institute of Animal Health and Veterinary Biologicals, Palode is the sole agency engaged in the production and distribution of animal vaccines in the State.

Under the Animal Disease Control Project, it has successfully taken up massive vaccination campaign to prevent Foot and Mouth disease (FMD) outbreak. The laboratory network coverage of the Animal Husbandry Department has been strengthened for timely diagnosis of animal diseases, thereby ensuring animal health. The data regarding outbreaks, attacks and deaths of major contagious diseases of animals in Kerala is monitored regularly by team of experts. The State has already eradicated the dreadful disease of Rinderpest and no outbreak of Rinderpest and Black Quarter diseases have been reported in the recent past.





V.1. Veterinary Infrastructure

TABLE V.1.1: Year and District-wise Veterinary Institutes

Districts	Number of Veterinary Institutes							
	2005-06	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	1,176	1,177	1,177	1,187	1,190	1,192	1,192	1,193
Alappuzha	82	82	82	82	83	83	83	83
Ernakulam	106	106	106	106	106	106	106	106
Idukki	63	63	63	66	66	66	66	66
Kannur	94	94	94	95	95	95	95	95
Kasaragod	44	44	44	44	44	44	44	44
Kollam	85	85	85	87	87	87	87	87
Kottayam	86	86	86	87	87	87	87	87
Kozhikode	90	90	90	90	90	90	90	90
Malappuram	109	109	109	111	112	112	112	112
Palakkad	101	101	101	102	103	103	103	103
Pathanamthitta	62	63	63	63	63	64	64	64
Thiruvananthapuram	103	103	103	103	103	104	104	104
Thrissur	122	122	122	122	122	122	122	122
Wayanad	29	29	29	29	29	29	29	30

SOURCE: Integrated Sample Survey Reports (2005-06 to 2013-14), Directorate of Animal husbandry, Govt. of Kerala.

NOTE: Veterinary Institutions includes: DVC - District veterinary centers, VH - Veterinary Hospital, VD - Veterinary Dispensary, RAIC- Regional Artificial Insemination center, MVD - Mobile Veterinary Dispensary, MVH - Mobile Veterinary Hospital.



V.1. Veterinary Infrastructure

TABLE V.1.2: Union-wise AI Centres – Cooperatives

Unions	Number of AI Centres									
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
KERALA	226	226	220	220	220	245	254	218	207	212
Ernakulam	118	118	118	118	118	118	118	83	83	83
Malabar	108	108	102	102	102	102	116	116	105	110
Thiruvananthapuram						25	20	19	19	19

SOURCE: Malabar, Ernakulam and Thiruvananthapuram Regional Co-operative Milk Producers' Union.





V.2. Service Delivery System - Artificial Insemination

TABLE V.2.1: District-wise AI Performed by Government Agencies – Bovine

Districts	Number of AI Performed ('000)							
	2005-06	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	1,174	1,204	1,075	1,299	1,387	1,485	1,291	1,225
Alappuzha	104	102	58	94	135	147	119	120
Ernakulam	86	84	71	80	77	104	74	60
Idukki	48	50	43	46	47	47	48	43
Kannur	69	72	70	89	88	87	95	89
Kasaragod	32	41	44	47	47	48	48	46
Kollam	123	127	114	156	162	167	136	126
Kottayam	70	66	56	85	69	104	75	62
Kozhikode	65	66	69	79	83	80	64	62
Malappuram	65	64	50	66	69	60	48	51
Palakkad	127	125	132	150	139	157	162	137
Pathanamthitta	75	92	64	65	76	103	74	77
Thiruvananthapuram	118	120	110	139	147	151	155	162
Thrissur	137	132	131	135	139	134	131	128
Wayanad	57	62	63	68	110	97	64	63

SOURCE: Integrated Sample Survey Reports (2005-06 to 2013-14), Directorate of Animal husbandry, Govt. of Kerala.



V.2. Service Delivery System - Artificial Insemination

TABLE V.2.2: Union-wise AI Performed by Cooperatives – Cattle

Unions	Number of AI Performed ('000)									
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
KERALA	145.7	145.5	152.0	150.0	151.6	156.2	157.8	140.5	110.6	113.6
Ernakulam	85.9	87.1	92.2	90.5	86.2	79.7	90.8	69.9	51.6	57.8
Malabar	59.8	58.4	59.8	59.5	62.6	70.8	62.2	59.8	48.1	47.6
Thiruvananthapuram					2.8	5.7	4.8	10.8	10.9	8.2

SOURCE: Malabar, Ernakulam and Thiruvananthapuram Regional Co-operative Milk Producers' Union.





V.3. Service Delivery System - Animal Health

TABLE V.3.1: District-wise Vaccination Performed for Foot-and-Mouth Disease

Districts	Foot-and-Mouth Disease Vaccination ('000)										
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
KERALA	2,287.9	2,286.5	2,463.2	2,311.4	2,983.4	3,380.1	2,242.2	1,421.3	2,813.2	2,336.4	1,054.0
Alappuzha	136.8	121.6	128.0	133.7	135.2	133.9	74.1	74.7	153.2	136.4	63.9
Ernakulam	193.4	214.5	221.6	214.4	234.8	243.7	110.5	112.2	222.3	177.9	80.2
Idukki	152.9	158.0	164.1	127.2	224.7	213.8	115.1	113.5	213.6	155.5	60.8
Kannur	181.2	176.7	176.6	181.0	196.0	192.7	112.3	113.1	213.3	160.7	69.7
Kasaragod	91.3	79.3	107.6	103.6	126.5	128.5	94.0	95.8	174.5	141.2	70.2
Kollam	159.3	203.8	211.9	231.8	339.8	477.6	457.6	89.2	210.0	185.4	77.9
Kottayam	159.1	117.6	154.2	126.9	180.9	197.9	87.1	87.1	173.4	139.2	58.4
Kozhikode	162.6	155.0	134.0	118.7	175.5	188.5	114.3	115.5	215.4	168.1	83.0
Malappuram	187.4	166.6	181.6	163.3	209.9	213.3	87.2	91.2	185.8	150.8	71.6
Palakkad	265.2	279.5	294.9	240.2	274.6	283.4	170.4	175.9	343.4	292.4	130.8
Pathanamthitta	106.8	116.7	129.8	145.6	185.3	251.2	245.0	65.0	129.1	109.2	46.3
Thiruvananthapuram	170.2	201.9	227.1	189.4	313.4	472.7	378.3	91.2	186.0	175.1	82.2
Thrissur	204.9	198.2	212.1	215.6	254.1	255.7	114.2	110.9	227.7	224.0	102.8
Wayanad	116.9	97.1	119.6	120.2	132.7	127.2	82.1	86.0	165.6	120.4	56.2

SOURCE: Directorate of Animal Husbandry, Govt. of Kerala.



V.3. Service Delivery System - Animal Health

TABLE V.3.2: District-wise Vaccination Preformed for Haemorrhagic Septicaemia

Districts	Haemorrhagic Septicaemia Vaccination ('000)										
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
KERALA	114.9	29.4	8.4	77.3	94.5	26.2	39.0	46.8	80.4	21.6	139.6
Alappuzha	11.3	3.9	0.0	5.2	12.2	1.1	2.1	3.0	3.7	0.0	3.9
Ernakulam	14.3	3.9	0.0	8.7	8.4	2.8	10.2	0.8	17.3	0.7	7.7
Idukki	4.7	3.1	3.7	6.2	6.7	0.4	5.0	2.0	10.3	0.0	0.9
Kannur	14.8	0.0	0.0	2.8	6.1	1.2	1.1	0.3	4.8	0.1	5.0
Kasaragod	8.1	0.0	0.0	1.3	7.0	4.2	0.2	1.5	1.1	0.5	5.5
Kollam	4.9	3.7	0.1	0.3	1.5	0.3	0.9	3.7	3.5	0.2	19.6
Kottayam	8.7	5.5	0.0	17.9	14.7	1.7	2.7	6.0	15.8	8.1	2.4
Kozhikode	6.4	0.0	0.0	2.1	6.3	3.8	5.3	3.9	6.6	1.3	4.7
Malappuram	6.6	0.0	0.7	4.8	3.5	1.6	0.9	7.6	0.9	0.1	6.0
Palakkad	7.5	0.7	0.0	5.0	10.2	1.5	1.2	2.4	0.8	1.3	18.5
Pathanamthitta	5.9	4.6	0.0	3.7	3.7	0.2	0.7	2.1	3.1	1.2	3.5
Thiruvananthapuram	0.1	0.9	0.9	6.3	2.9	0.9	4.0	0.7	2.7	2.0	0.1
Thrissur	10.8	3.0	3.1	8.3	7.7	5.5	3.7	7.6	4.6	5.4	59.8
Wayanad	10.6	0.0	0.0	4.6	3.6	1.0	1.1	5.2	5.2	0.7	1.9

Zero denotes either nil or negligible.

SOURCE: Directorate of Animal Husbandry, Govt. of Kerala.



V.3. Service Delivery System - Animal Health

TABLE V.3.3: District-wise Vaccination Preformed for Black Quarter

Districts	Black Quarter Vaccination ('000)										
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
KERALA	15.1	11.6	3.9	2.0	10.1	3.2	13.8	7.1	15.3	112.0	11.1
Alappuzha	0.6	1.5	0.0	0.0	0.6	0.3	0.8	1.2	1.2	1.0	0.0
Ernakulam	1.4	2.2	0.0	0.0	0.3	1.0	0.8	0.3	0.5	3.0	0.0
Idukki	0.9	0.5	0.7	0.0	0.4	0.0	0.6	0.3	1.7	3.1	0.0
Kannur	0.9	0.0	0.0	0.0	2.0	0.0	0.4	0.0	1.2	2.4	0.0
Kasaragod	1.5	0.0	0.0	0.0	0.3	0.0	0.4	0.7	0.2	2.2	2.0
Kollam	0.0	0.8	0.0	0.0	2.7	0.0	0.3	0.1	0.1	4.5	9.1
Kottayam	2.8	2.2	0.0	0.0	1.4	0.3	2.1	0.7	1.6	39.0	0.0
Kozhikode	0.6	0.0	0.0	0.0	0.2	0.2	2.2	0.3	1.1	3.0	0.0
Malappuram	0.8	0.0	0.7	0.2	0.0	0.0	0.6	0.4	0.4	3.0	0.0
Palakkad	1.5	0.7	0.0	0.2	0.5	0.1	0.4	0.3	0.5	3.0	0.0
Pathanamthitta	0.7	1.5	0.0	0.0	0.1	0.1	0.2	2.1	2.3	3.5	0.0
Thiruvananthapuram	0.0	0.1	0.1	1.5	0.8	0.7	1.2	0.1	0.0	3.4	0.0
Thrissur	1.8	2.0	2.4	0.0	0.5	0.3	1.6	0.6	4.4	30.5	0.0
Wayanad	1.6	0.0	0.0	0.1	0.1	0.2	2.1	0.2	0.2	10.4	0.0

Zero denotes either nil or negligible.

SOURCE: Directorate of Animal Husbandry, Govt. of Kerala.



V.3. Service Delivery System - Animal Health

TABLE V.3.4: District-wise Bovine Vaccination

Districts	Bovine Vaccination ('000)										
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
KERALA	2,417.9	2,327.5	2,475.5	2,390.7	3,088	3,409.5	2,295	1,475.2	2,908.9	2,470	1,204.7
Alappuzha	148.7	127.0	128.0	138.9	148.0	135.3	77.0	78.9	158.1	137.4	67.8
Ernakulam	209.1	220.6	221.6	223.1	243.5	247.5	121.5	113.3	240.1	181.6	87.9
Idukki	158.5	161.6	168.5	133.4	231.8	214.2	120.7	115.8	225.6	158.6	61.7
Kannur	196.9	176.7	176.6	183.8	204.1	193.9	113.8	113.4	219.3	163.2	74.7
Kasaragod	100.9	79.3	107.6	104.9	133.8	132.7	94.6	98.0	175.8	143.9	77.7
Kollam	164.2	208.3	212.0	232.1	344.0	477.9	458.8	93.0	213.6	190.1	106.6
Kottayam	170.6	125.3	154.2	144.8	197.0	199.9	91.9	93.8	190.8	186.3	60.8
Kozhikode	169.6	155.0	134.0	120.8	182.0	192.5	121.8	119.7	223.1	172.4	87.7
Malappuram	194.8	166.6	183.0	168.3	213.4	214.9	88.7	99.2	187.1	153.9	77.6
Palakkad	274.2	280.9	294.9	245.4	285.3	285.0	172.0	178.6	344.7	296.7	149.3
Pathanamthitta	113.4	122.8	129.8	149.3	189.1	251.5	245.9	69.2	134.5	113.9	49.8
Thiruvananthapuram	170.3	202.9	228.1	197.2	317.1	474.3	383.5	92.0	188.7	180.5	82.3
Thrissur	217.5	203.2	217.6	223.9	262.3	261.5	119.5	119.1	236.7	259.9	162.6
Wayanad	129.1	97.1	119.6	124.9	136.4	128.4	85.3	91.4	171.0	131.5	58.1

SOURCE: Directorate of Animal Husbandry, Govt. of Kerala.

NOTE: Bovine vaccination includes BQ, HS and FMD.



V.3. Service Delivery System - Animal Health

TABLE V.3.5: District-wise Total Cases Treated

Districts	Total Cases Treated ('000)							
	2005-06	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	5,029	5,260	5,027	4,262	4,287	4,830	4,815	5,078
Alappuzha	350	338	333	310	274	274	341	354
Ernakulam	466	500	492	428	378	397	405	404
Idukki	276	326	282	265	267	271	254	248
Kannur	314	325	297	302	287	220	175	380
Kasaragod	160	175	181	146	141	134	116	112
Kollam	473	522	470	303	279	450	406	426
Kottayam	377	346	346	373	346	334	339	391
Kozhikode	454	463	425	376	398	404	313	309
Malappuram	340	374	374	332	332	325	410	409
Palakkad	342	382	387	40	45	421	452	360
Pathanamthitta	282	268	273	243	249	259	281	317
Thiruvananthapuram	432	428	433	432	440	500	503	540
Thrissur	598	661	576	565	602	631	637	646
Wayanad	164	151	159	146	250	210	183	181

SOURCE: Integrated Sample Survey Reports (2005-06 to 2013-14), Directorate of Animal husbandry, Govt. of Kerala.



V.3. Service Delivery System - Animal Health

TABLE V.3.6: District-wise Total Castration

Districts	Total Castration ('000)							
	2005-06	2006-07	2007-08	2009-10	2010-11	2011-12	2012-13	2013-14
KERALA	5.33	4.83	4.86	4.70	4.37	3.94	2.96	2.0
Alappuzha	0.05	0.26	0.04	0.03	0.06	0.04	0.01	0.02
Ernakulam	0.24	0.23	0.17	0.15	0.04	0.03	0.25	0.02
Idukki	0.13	0.13	0.25	0.00	0.03	0.05	0.01	0.03
Kannur	0.01	0.01	0.06	0.32	0.07	0.02	0.00	0.03
Kasaragod	0.21	0.14	0.16	0.04	0.05	0.04	0.02	0.01
Kollam	0.06	0.05	0.29	0.25	0.46	0.08	0.07	0.03
Kottayam	0.15	0.19	0.08	0.22	0.17	0.05	0.02	0.07
Kozhikode	0.08	0.05	0.05	0.08	0.18	0.02	0.00	0.07
Malappuram	1.08	1.50	1.49	0.27	0.32	1.14	0.31	0.59
Palakkad	1.93	1.95	1.96	2.10	1.85	1.58	1.31	0.84
Pathanamthitta	0.19	0.10	0.12	0.05	0.05	0.02	0.00	0.00
Thiruvananthapuram	0.12	0.01	0.09	0.27	0.16	0.09	0.05	0.00
Thrissur	1.01	0.13	0.01	0.86	0.79	0.61	0.88	0.22
Wayanad	0.08	0.09	0.08	0.07	0.15	0.17	0.03	0.06

SOURCE: Integrated Sample Survey Reports (2005-06 to 2013-14), Directorate of Animal husbandry, Govt. of Kerala.



PART VI : FEED RESOURCES

The feed resources available from existing agricultural practices meet roughly 40 per cent of the dairy industry requirement of green and dry fodder. With increased cross-breeding, the physical stature of dairy animals has improved considerably and their body weight now is in the range of 325-350 kg as against earlier body weight of around 150 kg. As a result, the demand for feed and fodder has further increased.

The Government of Kerala is giving special focus on fodder and feed production to support development of the livestock sector and bridge the gap in the demand and supply of feed and fodder. The Dairy Development Department has brought additional 3,174 Ha under green fodder cultivation. It arranges for fodder exhibitions and workshops and has undertaken innovative fodder development programs under Integrated Dairy Development Program in the districts of Kannur and Thrissur. Also, maize was cultivated in about 318 Ha of land to produce 1,100 tons of maize grain and augment supplies. The State produces significant quantity of compound cattle feed annually and has plans to increase it further.





VI.1. Feed Resources - Availability vs. Requirement

TABLE VI.1.1: Area under Fodder Crops and Gross Sown Area

Districts	Area under Fodder Crops ('000 ha)									Gross Sown Area ('000 ha)								
	2000-01	2003-04	2007-08	2008-09	2009-10	2010-11	2011-12	2013-14	2014-15	2000-01	2003-04	2007-08	2008-09	2009-10	2010-11	2011-12	2013-14	2014-15
KERALA	2.92	3.40	4.96	5.40	4.83	4.65	4.44	4.53	5.57	3,022	2,954	2,761	2,695	2,669	2,647	2,662	2,617	2,625
Alappuzha	0.17	0.10	0.15	0.12	0.12	0.11	0.08	0.09	0.10	139	127	109	105	105	108	107	107	103
Ernakulam	0.14	0.15	0.27	0.23	0.23	0.23	0.20	0.18	0.19	223	210	185	179	176	172	172	165	166
Idukki	1.34	1.15	1.59	1.83	1.18	1.41	1.42	1.50	1.54	267	290	296	285	307	308	276	263	272
Kannur	0.16	0.13	0.29	0.27	0.33	0.19	0.11	0.17	0.19	275	257	219	213	214	211	227	219	221
Kasaragod	0.02	0.06	0.10	0.10	0.11	0.09	0.08	0.10	0.11	154	152	145	139	138	145	151	152	153
Kollam	0.17	0.23	0.22	0.24	0.22	0.20	0.21	0.14	0.15	212	187	171	167	161	160	157	160	151
Kottayam	0.12	0.15	0.21	0.21	0.27	0.21	0.22	0.24	0.26	225	214	216	216	206	207	209	200	202
Kozhikode	0.04	0.05	0.10	0.08	0.12	0.10	0.07	0.06	0.08	230	227	212	204	200	202	207	200	202
Malappuram	0.03	0.02	0.04	0.05	0.06	0.05	0.04	0.05	0.06	270	273	247	243	242	237	241	237	241
Palakkad	0.30	0.77	0.81	1.12	1.26	1.24	1.23	1.30	2.14	311	317	322	315	314	303	302	302	301
Pathanamthitta	0.08	0.20	0.27	0.29	0.21	0.20	0.22	0.16	0.17	115	115	107	102	104	103	102	101	103
Thiruvananthapuram	0.12	0.12	0.17	0.10	0.10	0.12	0.08	0.09	0.1	195	183	159	163	154	154	155	159	163
Thrissur	0.04	0.09	0.10	0.84	0.07	0.06	0.07	0.07	0.07	198	196	174	173	170	161	181	178	175
Wayanad	0.20	0.18	0.64	0.68	0.56	0.45	0.41	0.39	0.40	209	205	200	190	177	175	172	174	171

SOURCE: Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture and Farmers Welfare, Govt. of India.



VI.1. Feed Resources - Availability vs. Requirement

TABLE VI.1.2: District-wise Dry Matter (DM) Availability, Requirement and Balance

Districts	Available/ Required/ Balance	Dry Matter Availability, Requirement and Balance ('000 MT)						
		1997	2003	2007	2008	2009	2010	2011
Alappuzha	Available	163	177	175	140	193	185	61
	Requirement	479	503	299	273	251	231	213
	Balance	-316	-326	-124	-134	-58	-45	-152
Ernakulam	Available	215	204	181	157	159	153	126
	Requirement	780	473	601	657	723	797	882
	Balance	-564	-269	-419	-500	-564	-645	-756
Idukki	Available	227	244	238	233	244	247	225
	Requirement	647	451	549	594	647	709	778
	Balance	-420	-207	-311	-361	-403	-462	-553
Kannur	Available	159	159	154	151	151	150	132
	Requirement	524	862	419	372	332	297	266
	Balance	-365	-703	-264	-221	-181	-147	-134
Kasaragod	Available	106	101	96	94	95	92	80
	Requirement	404	399	251	227	208	191	178
	Balance	-299	-298	-155	-133	-113	-99	-98
Kollam	Available	157	151	135	129	130	129	119
	Requirement	675	585	456	437	419	404	389
	Balance	-518	-435	-321	-308	-290	-274	-271
Kottayam	Available	152	155	161	152	156	166	116
	Requirement	659	563	482	478	475	473	473
	Balance	-507	-408	-321	-326	-319	-307	-357
Kozhikode	Available	113	133	131	130	131	129	124
	Requirement	577	332	417	435	455	475	498
	Balance	-464	-199	-286	-305	-324	-346	-374
Malappuram	Available	218	219	211	197	198	194	169
	Requirement	598	369	415	416	418	422	428
	Balance	-380	-150	-204	-219	-220	-228	-259
Palakkad	Available	557	559	581	550	546	583	227
	Requirement	900	628	741	771	803	838	876
	Balance	-343	-69	-160	-220	-257	-255	-649
Pathanamthitta	Available	141	132	124	120	124	124	115
	Requirement	495	559	355	335	318	304	293
	Balance	-354	-427	-232	-215	-194	-180	-178
Thiruvananthapuram	Available	124	118	113	109	109	110	100
	Requirement	735	502	598	638	683	734	791
	Balance	-611	-384	-485	-528	-573	-624	-691
Thrissur	Available	290	244	216	208	224	214	134
	Requirement	934	366	507	596	706	841	1,003
	Balance	-644	-122	-292	-388	-482	-626	-870
Wayanad	Available		171	170	173	175	174	131
	Requirement		558	227	192	164	140	121
	Balance		-387	-57	-20	11	33	10

SOURCE: Feedbase 2012, National Institute of Animal Nutrition and Physiology, Bangalore.





VI.1. Feed Resources - Availability vs. Requirement

TABLE VI.1.3: Availability, Requirement and Surplus/Deficit of Dry Matter

Year	Dry Matter ('000 MT)		
	Availability	Requirement	Surplus/Deficit
1997	2,711.9	8,405.9	-5,694.0
2003	2,766.1	7,150.2	-4,384.1
2007	2,686.4	6,317.0	-3,630.6
2008	2,544.7	6,421.0	-3,876.3
2009	2,634.7	6,602.0	-3,967.3
2010	2,651.1	6,856.0	-4,204.9
2011	1,857.0	7,189.0	-5,332.0

SOURCE: Feedbase 2012, National Institute of Animal Nutrition and Physiology, Bangalore.

VI.2. Feed Resources - Consumption

TABLE VI.2.1: Year-wise Feed Consumption – Indigenous Cattle

(kg/animal/day)

Year	In-Milk Animal			Dry Animal (Including Not Calved even Once)		
	Green Fodder	Dry Fodder	Concentrate	Green Fodder	Dry Fodder	Concentrate
2000-01	5.50	3.05	1.71	3.70	2.00	1.15
2003-04	5.40	3.00	1.70	3.75	2.00	1.10
2007-08	5.60	3.05	1.75	3.95	2.10	1.15
2009-10	9.65	3.09	1.02	5.90	1.94	1.00
2011-12	9.24	1.80	2.19	9.04	1.94	1.79
2012-13	9.24	1.80	2.19	9.04	1.94	1.79
2013-14	12.09	3.47	5.43	10.58	2.95	3.52

SOURCE: Integrated Sample Survey Reports, Directorate of Animal Husbandry, Govt. of Kerala.

TABLE VI.2.2: Year-wise Feed Consumption – Crossbred Cattle

(kg/animal/day)

Year	In-Milk Animal			Dry Animal (Including Not Calved even Once)		
	Green Fodder	Dry Fodder	Concentrate	Green Fodder	Dry Fodder	Concentrate
2000-01	8.50	4.00	3.20	5.00	3.00	1.95
2003-04	8.50	4.00	3.25	5.20	3.00	1.80
2007-08	8.65	4.10	3.20	5.20	3.05	1.80
2009-10	10.75	4.90	4.11	8.00	3.25	2.91
2011-12	14.18	3.14	4.05	11.75	2.56	2.51
2012-13	14.18	3.14	4.05	11.75	2.56	2.51
2013-14	12.68	4.20	5.53	12.10	3.50	4.31

Source: Integrated Sample Survey Reports, Directorate of Animal Husbandry, Govt. of Kerala.



VI.2. Feed Resources - Consumption

TABLE VI.2.3: Year-wise Feed Consumption – Buffalo

(kg/animal/day)

Year	In-Milk Animal			Dry Animal (Including Not Calved even Once)		
	Green Fodder	Dry Fodder	Concentrate	Green Fodder	Dry Fodder	Concentrate
2000-01	8.40	4.20	3.70	4.50	3.00	2.00
2003-04	8.50	4.00	3.40	5.00	3.05	2.00
2007-08	8.65	4.20	3.35	5.00	3.25	2.10
2009-10	10.75	4.90	4.40	8.70	3.35	2.00
2011-12	13.60	4.12	5.30	11.76	3.36	3.91
2012-13	13.60	4.12	5.30	11.76	3.36	3.91
2013-14	12.69	4.85	5.87	11.84	4.17	4.45

SOURCE: Integrated Sample Survey Reports, Directorate of Animal Husbandry, Govt. of Kerala.



PART VII : AGRICULTURE

In Kerala, the growth of agriculture and allied sectors has been fluctuating over the years. The total geographical area of the State is about 39 lakh hectares (Ha) of which 52.7 per cent is the net sown area. The area under food crops comprising of rice and pulses occupy about 10.5 per cent of the cultivated area. In past four decades, the area under paddy cultivation has decreased by 77 per cent from 8.76 lakh Ha in 1975-76 to around 2.3 lakh Ha in 2014-15. Kerala produces about 97 per cent of the black pepper and 85 per cent of the natural rubber in the country. It is also a significant producer of coconut, tea, coffee, cashew, and spices – like cardamom, vanilla, cinnamon, and nutmeg. Kollam has emerged as major hub for export of processed cashews.

The State Government is committed towards sustainable development of agricultural sector. It has constituted a Task Force for Agricultural Development to suggest strategies for revitalization of agriculture and allied sectors. Also, it has initiated soil based plant nutrient management plan. For this purpose, soil test based health cards have been generated and Nutrient Management Plan has been prepared.





VII.1. Agro-Ecological Zones

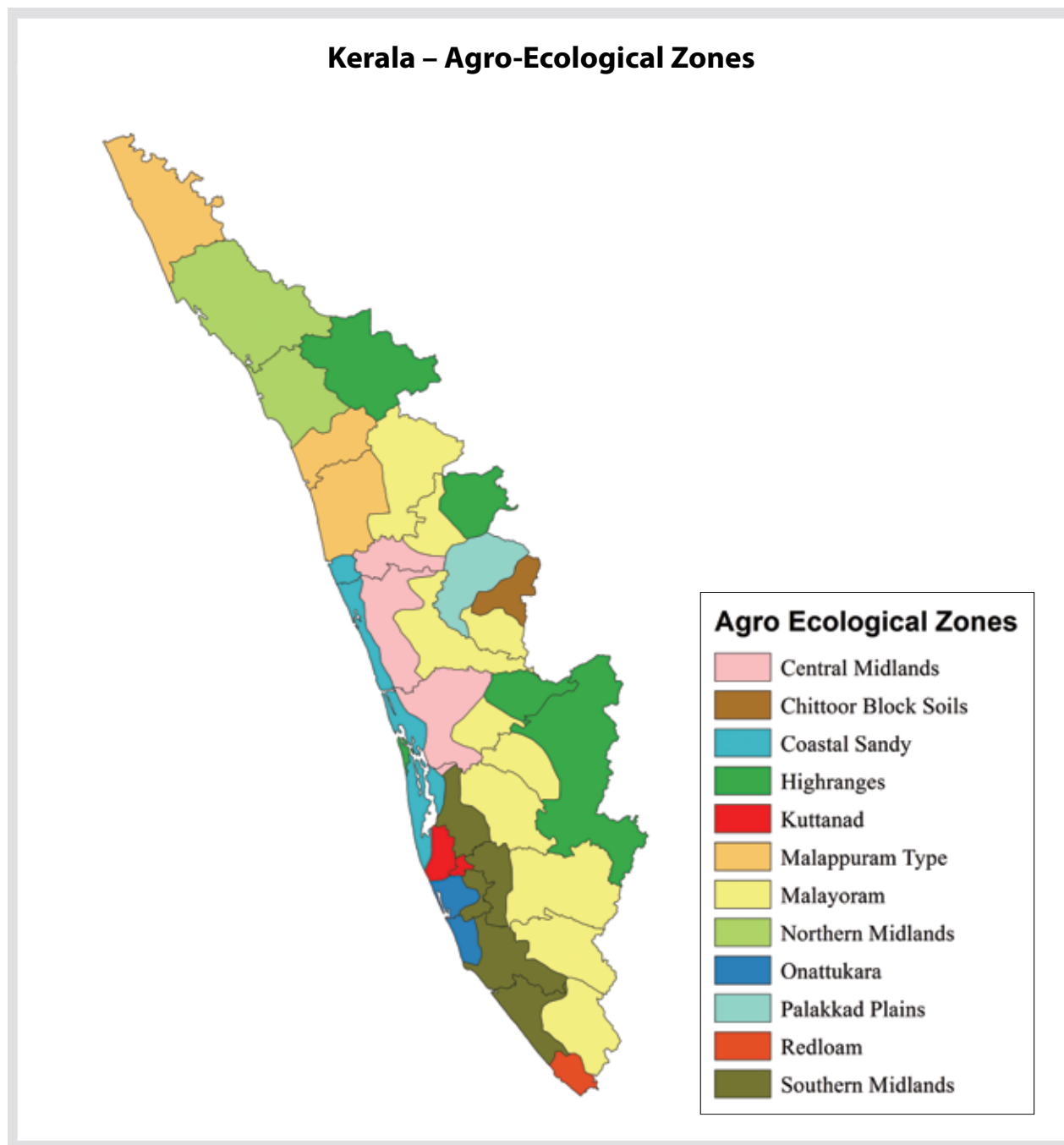


TABLE VII.1.1: Kerala's Agro-Ecological Zones

Onattukara	Coastal Sandy	Southern midlands	Central midlands	Northern midlands	Malappuram type
Malayoram	Palakkad plains	Red loam	Chittoor black soil	Kuttanad	Riverbank alluvium
High ranges					

SOURCE: Karshaka Information Systems Services And Networking, Department of Agriculture, Govt. of Kerala.



VII.1. Agriculture

TABLE VII.1.2: Details of Agro-Ecological Zones

Parameters	Onattukara	Coastal sandy	Southern midlands	Central midlands	Northern midlands	Malappuram type
Altitude type	Altitude Up to 500 m above Mean Sea Level (MSL)	Altitude Up to 500 m above MSL	Altitude Up to 500 m above MSL	Altitude Up to 500 m above MSL	Altitude Up to 500 m above MSL	Altitude Up to 500 m above MSL
Rainfall pattern	Both the southwest and northeast monsoons are active and moderately distributed	Both the southwest and northeast monsoons are active and moderately distributed	Both the southwest and northeast monsoons are active and moderately distributed	Both the southwest and northeast monsoons are active and moderately distributed. Poorly distributed rainfall; southwest monsoon with July maximum and concentrated in 3-4 months. Northeast monsoon relatively weak	Poorly distributed rainfall; southwest monsoon exist for 3-4 months. Northeast monsoon relatively weak	Poorly distributed rainfall; southwest monsoon exist for 3-4 months. Northeast monsoon relatively weak
Topography type	Extensive valleys with level but raised garden lands	Extensive valleys with level but raised garden lands	Narrow valleys, Hills with steep gradients and Steep slopes	Valleys less extensive, Hills with moderate gradients, Slopes having mild gradients	Valleys less extensive, Hills with moderate gradients and top with egg shaped hump and Steep slopes	Valleys less extensive, Hills with table tops and Steep slopes
Soil type	Sandy loam	Sandy loam	Laterite without B-horizon	Laterite	Laterite	Laterite
Crop	Rice, Legumes, Sesame, Vegetables, Spices, Banana, Coconut, Tapioca	Rice, Spices, Banana, Coconut, Mango, Cashew, Pepper, Arecanut, Tapioca	Rice, Vegetables, Spices, Banana, Tapioca, Rubber, Mango, Pepper, Coconut, Arecanut	Rice, Vegetables, Spices, Banana, Tapioca, Rubber, Mango, Pepper, Arecanut, Coconut	Rice, Vegetables, Spices, Banana, Tapioca, Rubber, Mango, Pepper, Arecanut, Coconut	Rice, Vegetables, Spices, Banana, Tapioca, Rubber, Mango, Pepper, Arecanut, Coconut

SOURCE: Karshaka Information Systems Services And Networking, Department of Agriculture, Govt. of Kerala and Kerala Agricultural University.



VII.1. Agriculture

TABLE VII.1.2: Details of Agro-Ecological Zones

Parameters	Malayoram	Palakkad plains	Red loam	Chittoor black soil	Kuttanad	Riverbank alluvium	High ranges
Altitude type	Altitude Up to 500 m above MSL	Altitude Up to 500 m above MSL	Altitude Up to 500 m above MSL	Altitude Up to 500 m above MSL	Altitude Up to 500 m above MSL	Altitude Up to 500 m above MSL	More than 500 m above MSL
Rainfall pattern	Both the southwest and northeast monsoons are active and moderately distributed	Poorly distributed rainfall; southwest monsoon exist for 3-4 months. Northeast monsoon relatively weak	Both the southwest and north-east monsoons are active and moderately distributed	Poorly distributed rainfall; southwest monsoon exist for 3-4 months. Northeast monsoon relatively weak	Both the southwest and northeast monsoons are active and moderately distributed	Both the southwest and northeast monsoons are active and moderately distributed	Both the southwest and northeast monsoons are active and moderately distributed. Poorly distributed rainfall; southwest monsoon exist for 3-4 months. Northeast monsoon relatively weak
Topography type	Narrow valleys, Hills with steep gradients and Steep slopes		Narrow valleys, Hills with steep gradients and Steep slopes	Valleys less extensive, Hills with moderate gradients, Slopes having mild gradients	Extensive valleys with level but raised garden lands	Extensive valleys with level but raised garden lands	Narrow valleys, Hills with steep gradients, Steep slopes
Soil type	Laterite without B	Red loam	Red loam	Black soil	Peat (kari)	Alluvium	Red loam
Crop	Rice, Vegetables, Spices, Banana, Tapioca, Rubber, Mango, Pepper, Arecanut, Coconut	Rice, Vegetables, Spices, Banana, Tapioca, Tapioca, Rubber, Mango, Pepper, Arecanut, Coconut	Rice, Vegetables, Spices, Banana, Tapioca, Mango, Pepper, Coconut, Cashew	Rice, Legumes, Spices, Banana, Cotton, Coconut	Rice, Spices, Banana, Coconut, Cocoa, Tapioca, Mango, Arecanut	Rice, Vegetables, Spices, Banana, Coconut, Pepper, Tapioca	Rice, Vegetables, Sugarcane, Spices, Banana, Cardamom, Coffee, Rubber, Pepper, Ginger, Tapioca

SOURCE: Karshaka Information Systems Services And Networking, Department of Agriculture, Govt. of Kerala and Kerala Agricultural University.



VII.2. Land Use Pattern

TABLE VII.2.1: District-wise Land Use Pattern

(‘000 ha)

Districts	Reporting Area		Forest Area		PPGL		Fallow land		Net Sown Area	
	2000-01	2014-15	2000-01	2014-15	2000-01	2014-15	2000-01	2014-15	2000-01	2014-15
KERALA	3,885	3,886	1,082	1,082	0.164	0.005	112	120	2,206	2,043
Alappuzha	136	141	-	-	-	-	14	6	94	85
Ernakulam	235	306	8	71	0.016	-	8	16	170	152
Idukki	515	436	261	198	0.098	-	2	3	226	206
Kannur	297	297	49	49	0.005	-	7	7	203	191
Kasaragod	196	199	6	6	-	-	6	4	136	148
Kollam	252	249	81	81	0.003	-	5	6	142	123
Kottayam	220	220	8	8	-	-	7	8	173	162
Kozhikode	233	235	41	41	-	-	3	3	160	151
Malappuram	363	355	103	103	-	0.002	14	12	201	177
Palakkad	439	448	136	136	0.001	0.001	23	26	204	197
Pathanamthitta	269	265	155	155	-	-	5	7	93	82
Thiruvananthapuram	219	219	50	50	0.008	-	2	4	143	128
Thrissur	299	303	104	104	0.011	0.002	13	15	145	130
Wayanad	213	213	79	79	0.022	-	3	3	116	115

PPGL : Permanent Pastures and Other Grazing Lands

SOURCE : Directorate of Economics and Statistics, Ministry of Agriculture and Farmers Welfare, Govt. of India and Directorate of Economics and Statistics, Govt. of Kerala.



VII.3. Area and Production

TABLE VII.3.1: District-wise Area and Production – Cereals

Districts	Cereals											
	Area ('000 ha)						Production ('000 MT)					
	*2004-09	2010-11	2011-12	2012-13	2013-14	2014-15	*2004-09	2010-11	2011-12	2012-13	2013-14	2014-15
KERALA	262.0	215.9	208.9	197.8	199.9	198.2	613.6	524.3	569.8	508.4	564.3	562.4
Alappuzha	31.9	37.1	36.3	36.2	37.4	34.4	81.4	91.3	112.0	104.6	106.9	103.1
Ernakulam	20.1	9.0	7.7	3.9	4.1	4.6	39.4	17.8	16.6	8.5	9.1	10.0
Idukki	2.8	1.9	1.3	1.2	0.7	0.7	6.9	4.8	3.1	3.2	1.8	1.8
Kannur	8.4	6.3	5.7	6.7	5.1	5.0	15.9	13.3	12.2	14.2	11.3	11.2
Kasaragod	5.4	4.2	3.9	3.5	4.2	2.7	12.1	9.8	8.6	8.1	9.4	6.1
Kollam	5.8	3.3	2.1	1.4	1.4	1.3	13.1	7.2	4.8	2.9	3.2	3.2
Kottayam	12.3	14.8	21.4	17.6	15.7	17.3	32.0	41.0	63.6	51.0	50.7	49.4
Kozhikode	4.3	3.0	2.9	3.5	2.4	2.3	6.0	3.8	4.3	5.3	3.9	3.4
Malappuram	13.5	9.0	7.5	6.7	7.5	8.4	29.2	21.1	18.6	15.4	19.7	22.3
Palakkad	109.3	90.2	84.7	79.7	83.2	82.9	258.3	219.7	225.2	189.5	238.7	236.4
Pathanamthitta	3.0	3.0	2.8	2.3	2.5	2.6	7.5	6.6	9.0	6.0	7.6	7.6
Thiruvananthapuram	3.9	2.9	2.4	1.8	2.0	2.1	9.6	6.9	6.1	4.1	5.3	5.6
Thrissur	29.4	20.3	21.2	23.1	22.3	24.2	71.4	53.1	62.3	67.6	66.7	76.0
Wayanad	12.0	11.1	9.0	10.2	11.5	9.7	30.9	27.9	23.5	28.1	30.8	26.2

*Average from 2004-05 to 2008-09.

Zero denotes either nil or negligible.

SOURCE: Directorate of Economics and Statistics, Govt. of Kerala.



VII.3. Area and Production

TABLE VII.3.2: District-wise Area and Production – Pulses

Districts	Pulses											
	Area ('000 ha)						Production ('000 MT)					
	*2004-09	2010-11	2011-12	2012-13	2013-14	2014-15	*2004-09	2010-11	2011-12	2012-13	2013-14	2014-15
KERALA	6.8	3.8	3.7	2.9	3.0	3.6	5.6	2.9	3.1	3.2	3.0	3.4
Alappuzha	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0
Ernakulam	0.4	0.1	0.1	0.2	0.2	0.4	0.4	0.1	0.1	0.1	0.1	0.2
Idukki	0.2	0.1	0.1	0.1	0.2	0.3	0.2	0.0	0.1	0.1	0.2	0.2
Kannur	0.5	0.2	0.4	0.2	0.5	0.5	0.4	0.2	0.3	0.2	0.4	0.3
Kasaragod	0.2	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.1
Kollam	0.3	0.1	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.0
Kottayam	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Kozhikode	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Malappuram	0.3	0.1	0.0	0.1	0.3	0.3	0.3	0.1	0.0	0.1	0.2	0.2
Palakkad	3.6	2.4	1.8	1.3	1.2	1.1	2.7	1.8	1.5	1.9	1.6	1.6
Pathanamthitta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thiruvananthapuram	0.3	0.0	0.2	0.0	0.1	0.1	0.2	0.0	0.2	0.0	0.0	0.1
Thrissur	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Wayanad	0.4	0.5	0.8	0.8	0.0	0.6	0.3	0.4	0.7	0.6	0.1	0.5

*Average from 2004-05 to 2008-09.

Zero denotes either nil or negligible.

SOURCE: Directorate of Economics and Statistics, Govt. of Kerala.





VII.3. Area and Production

TABLE VII.3.3: District-wise Area and Production – Food Grains

Districts	Food Grains											
	Area ('000 ha)						Production ('000 MT)					
	*2004-09	2010-11	2011-12	2012-13	2013-14	2014-15	*2004-09	2010-11	2011-12	2012-13	2013-14	2014-15
KERALA	268.9	219.7	212.5	200.7	202.9	201.8	619.2	527.2	572.9	511.7	567.3	565.8
Alappuzha	31.9	37.1	36.3	36.2	37.4	34.5	81.4	91.4	112.0	104.6	106.9	103.1
Ernakulam	20.4	9.2	7.8	4.1	4.2	5.0	39.8	17.9	16.7	8.6	9.2	10.2
Idukki	3.0	1.9	1.4	1.3	0.9	1.0	7.1	4.8	3.2	3.3	2.0	2.0
Kannur	9.0	6.6	6.1	6.9	5.6	5.5	16.4	13.5	12.5	14.4	11.7	11.5
Kasaragod	5.6	4.2	3.9	3.6	4.2	2.8	12.3	9.9	8.6	8.2	9.5	6.2
Kollam	6.2	3.5	2.2	1.5	1.5	1.4	13.5	7.2	4.8	3.0	3.3	3.2
Kottayam	12.5	14.8	21.6	17.6	16.0	17.4	32.2	41.0	63.7	51.1	50.9	49.5
Kozhikode	4.4	3.0	3.0	3.5	2.4	2.3	6.1	3.8	4.3	5.3	3.9	3.4
Malappuram	13.8	9.1	7.6	6.7	7.9	8.7	29.5	21.2	18.6	15.4	20.0	22.5
Palakkad	113.0	92.6	86.5	81.0	84.4	84.0	261.0	221.4	226.6	191.4	240.3	238.0
Pathanamthitta	3.0	3.0	2.8	2.3	2.5	2.6	7.5	6.6	9.0	6.0	7.6	7.6
Thiruvananthapuram	4.2	3.0	2.6	1.8	2.1	2.2	9.8	7.0	6.3	4.1	5.4	5.6
Thrissur	29.6	20.3	21.2	23.1	22.3	24.2	71.5	53.1	62.3	67.6	66.7	76.0
Wayanad	12.4	11.6	9.8	11.0	11.5	10.3	31.2	28.3	24.2	28.7	30.8	26.7

*Average from 2004-05 to 2008-09.

Zero denotes either nil or negligible.

SOURCE: Directorate of Economics and Statistics, Govt. of Kerala.



VII.3. Area and Production

TABLE VII.3.4: District-wise Area and Production – Oilseeds

Districts	Oilseeds											
	Area ('000 ha)						Production ('000 MT)					
	*2004-09	2010-11	2011-12	2012-13	2013-14	2014-15	*2004-09	2010-11	2011-12	2012-13	2013-14	2014-15
KERALA	3.0	2.0	1.9	2.1	1.9	1.5	2.3	2.1	2.2	1.1	1.0	0.8
Alappuzha	0.1		0	0.2	0.1	0.2	0.1	0	0	0	0	0
Ernakulam	0.1	0	0	0.1	0.1	0	0	0	0	0	0	0
Idukki	0	0	0	0	0	0	0	0	0	0	0	0
Kannur	0			0.1	0.1	0.1	0			0	0	0
Kasaragod	0			0	0	0	0			0	0	0
Kollam	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1		0	0	0
Kottayam	0			0.1	0.1	0.1	0			0	0	0
Kozhikode	0	0		0	0	0	0			0	0	0
Malappuram	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0	0	0	0
Palakkad	2.5	1.6	1.7	1.0	0.9	0.6	2.0	1.9	2.2	1.0	0.9	0.7
Pathanamthitta	0	0		0.1	0.0	0.1	0		0	0	0	0
Thiruvananthapuram	0	0		0	0	0	0	0		0	0	0
Thrissur	0	0	0	0.1	0.1	0.1	0	0	0	0	0	0
Wayanad	0			0	0.1	0.1	0	0		0	0	0

*Average from 2004-05 to 2008-09.

Zero denotes either nil or negligible.

SOURCE: Directorate of Economics and Statistics, Govt. of Kerala.



VII.3. Area and Production

TABLE VII.3.5: District-wise Area and Production – Sugarcane

Districts	Sugarcane									
	Area ('000 ha)					Production ('000 MT)				
	*2004-09	2010-11	2011-12	2012-13	2014-15	*2004-09	2010-11	2011-12	2012-13	2014-15
KERALA	2.1	2.9	2.6	1.7	1.5	147	272	263	166	149
Alappuzha	0.1	0.1	0.1	0.1	0.1	4	5	8	6	0
Ernakulam		0	0	0	0	0	0	0	0	0
Idukki	1.4	2.2	2.1	1.4	1.1	97	217	227	143	115
Kannur	0	0	0	0	0	2	0	0	0	0
Kasaragod	0	0	0	0	0	0	0	0	0	0
Kollam	0	0		0	0	0	0	0	0	0
Kottayam	0	0	0	0	0	2	2	1	1	1
Kozhikode	0	0		0	0	0	0	0	0	0
Malappuram	0	0		0	0	0	0	0	0	0
Palakkad	0.6	0.6	0.3	0.3	0.4	39	47	25	14	31
Pathanamthitta	0.1	0	0	0	0	3	1	1	0	1
Thiruvananthapuram	0	0	0	0	0	0	0	0	0	0
Thrissur	0	0		0	0	0	0	0	0	0
Wayanad	0	0	0	0	0	0	0	0	0	0

*Average from 2004-05 to 2008-09.

Zero denotes either nil or negligible.

SOURCE: Directorate of Economics and Statistics, Govt. of Kerala.





VII.4. Land Holding and Water Resources

TABLE VII.4.1: Operational Holdings in Kerala

Size of Holding (ha)	Total Holdings		Average Size of Holding (ha)
	Number ('000)	Area ('000 ha)	
Marginal (<1 ha)	6,579.69	885.64	0.13
Small (1-2 ha)	180.17	282.31	1.57
Semi-medium (2-4 ha)	57.03	159.08	2.79
Medium (4-10 ha)	12.04	64.06	5.32
Large (>10 ha)	1.85	119.73	64.58
All Classes	6,830.79	1,510.82	0.22

SOURCE: Agricultural Census Database, 2010-11, Ministry of Agriculture & Farmers Welfare, Govt. of India.

TABLE VII.4.2: Net Irrigated Area under Different Sources of Irrigation

('000 ha)

Particulars	1997-98	2000-01	2007-08	2008-09	2011-12	2012-13	2013-14	2014-15
Net Irrigated Area	350	381	388	390	409	396	397	414
Net Sown Area	2,271	2,206	2,089	2,089	2,040	2,048	2,051	2,043
Gross Sown Area	2,969	3,022	2,761	2,695	2,662	2,592	2,617	2,625
Sources (net irrigated area)								
Canals	104	105	93	102	84	83	94	98
Tanks/Ponds	45	50	42	40	47	44	45	62
Wells and Tube Wells	83	116	149	152	162	148	155	163
Other Sources	118	110	105	96	116	121	103	91

SOURCE: Directorate of Economics and Statistics, Ministry of Agriculture and Farmers Welfare, Govt. of India and Directorate of Economics and Statistics, Govt. of Kerala.

TABLE VII.4.3: Major River Basins of Kerala

Name of the River	Origin	Length (km)	Catchment Area (sq km)	States Falling in the Catchment Area
Cauvery	Coorg (Karnataka)	800	81,155	Kerala, Tamil Nadu, Karnataka, Pondicherry

SOURCE: Hydrology and Water Resources Information System for India, National Institute of Hydrology, Roorkee.



VII.4. Land Holding and Water Resources

TABLE VII.4.4: Medium River Basins of Kerala

Name of River	Village/District (<i>origin</i>)	Length (km)	Catchment Area (sq km)
West Flowing Rivers			
Chaliar or Baypore	Elamtalvi Hills	169	2,788
Periyar	Sivajini Hills	244	5,398
Pamba	Devarmalai	176	2,235

SOURCE: Hydrology and Water Resources Information System for India, National Institute of Hydrology, Roorkee.





VII.5. Rainfall

TABLE VII.5.1: District- wise Average Annual Rainfall

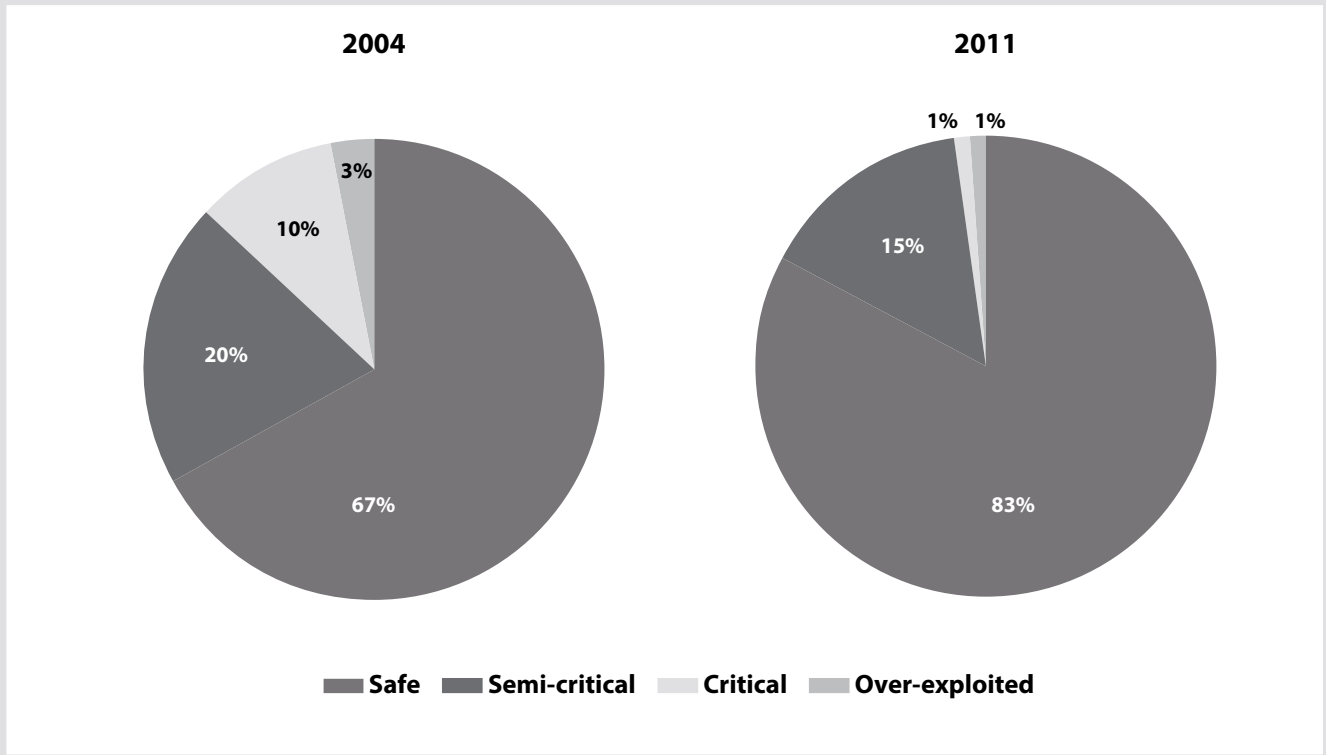
Districts	Average Annual Rainfall (mm)				
	2001 - 2010	2011	2012	2013	2014
KERALA	2,952	3,046	2,187	3,221	3,132
Alappuzha	2,728	2,602	1,846	2,824	2,410
Ernakulam	3,383	3,501	2,608	3,658	3,286
Idukki	3,824	3,674	2,603	4,060	3,762
Kannur	3,212	3,473	2,667	4,022	3,690
Kasaragod	3,336	3,857	3,046	3,570	3,675
Kollam	2,434	2,293	1,656	2,688	2,480
Kottayam	3,097	3,289	2,297	3,605	3,245
Kozhikode	3,186	3,973	2,930	3,843	3,871
Malappuram	2,633	2,946	1,986	3,214	3,061
Palakkad	2,268	2,611	1,698	2,570	2,496
Pathanamthitta	2,839	2,654	1,818	2,847	2,980
Thiruvananthapuram	1,893	1,518	1,154	1,845	1,948
Thrissur	2,893	3,143	2,352	3,184	2,825
Wayanad	2,499	2,632	1,843	3,170	3,071

SOURCE: Directorate of Economics and Statistics, Govt of Kerala and India Meteorological Department, Govt. of India.



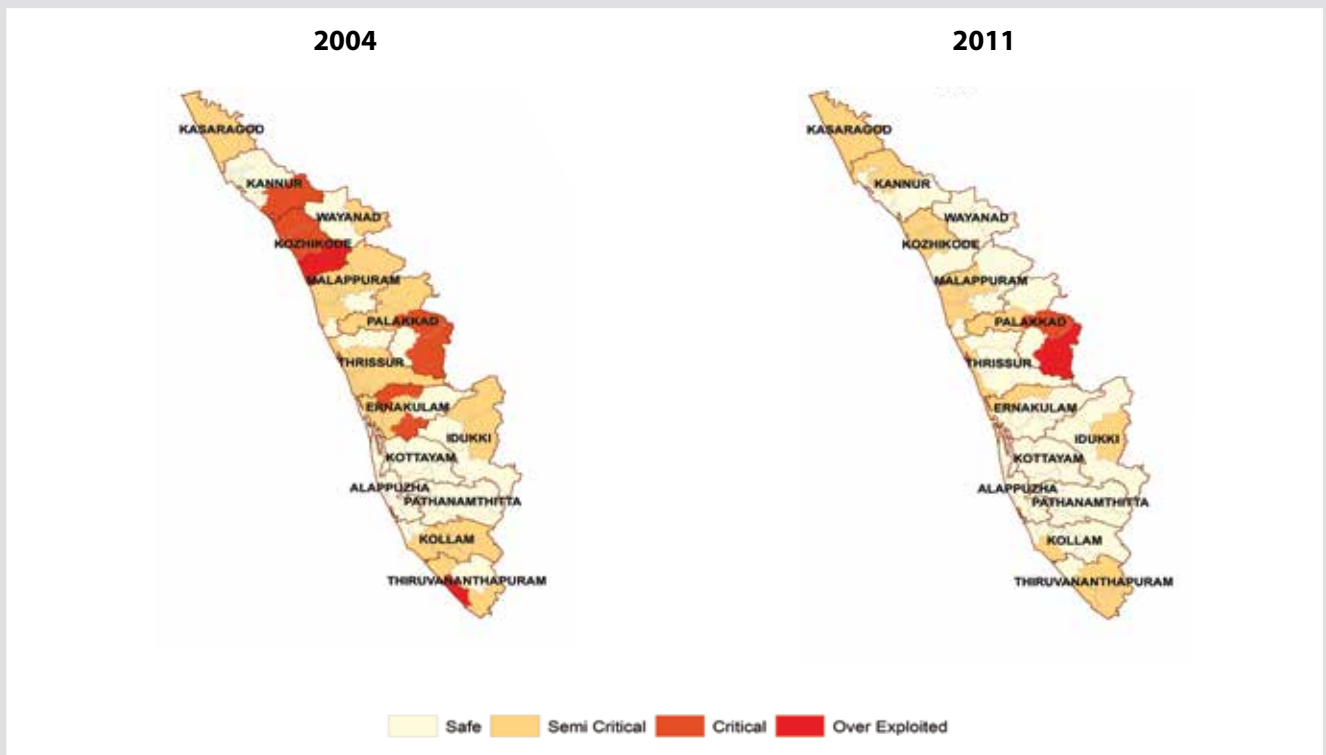


Status of Ground Water (% of Blocks)



SOURCE: Dynamic Ground Water Resources of India (2004-2011), Central Ground Water Board, Ministry of Water Resources, River Development & Ganga Rejuvenation, Govt. of India.

Groundwater Status in Kerala





VII.5. Rainfall

TABLE VII.5.2: Distribution of Blocks according to ground water status

Districts	Number of Blocks under								
	Semi-critical			Critical			Over-exploited		
	2004	2009	2011	2004	2009	2011	2004	2009	2011
KERALA	30	22	23	15	3	2	5	1	1
Alappuzha									
Ernakulam	4	3	3	4					
Idukki	2	2	2	1					
Kannur		2	2	2					
Kasaragod	2	1	3		1	1	1		
Kollam	4	1	1						
Kottayam									
Kozhikode	1	2	2	2			1		
Malappuram	8	3	3	1					
Palakkad	2	2	2	3	1	1	1	1	1
Pathanamthitta									
Thiruvananthapuram	2	5	3	2			1		
Thrissur	4	1	2		1		1		
Wayanad	1								

SOURCE: Dynamic Ground Water Resources of India (2004-2011), Central Ground Water Board, Ministry of Water Resources, River Development & Ganga Rejuvenation, Govt. of India.

PART VIII : POLICIES AND SCHEMES FOR DAIRY DEVELOPMENT IN KERALA

In 1956, the State of Kerala was formed and the Department of Animal Husbandry was also established to provide veterinary services and animal health care to farmers. In 1961, the Dairy Development Department was constituted to carry out dairy development activities in the State. In 1976, the Kerala Livestock Development Board (KLDB) was established for breed development. As milk production increased, Kerala Co-operative Milk Marketing Federation (KCMMF) was established in 1980 to channelise marketable surplus milk from the rural areas to urban areas to maximize returns to the producer and provide quality milk and milk products to consumers. Also, the Kerala Veterinary & Animal Sciences University (KVASU) was formed to provide professionals for animal husbandry sector. Presently, dairying in Kerala is supported by :

- i) **Animal Husbandry Department (AHD):** The Animal Husbandry Directorate is in Thiruvananthapuram. It is vested with overall technical, administrative and financial assistance for providing veterinary services, breeding and animal health care in the state.





- ii) **Department of Dairy Development:** It is located at Trivandrum having 14 offices at district level headed by a deputy director who, in turn, is supported by quality control officer. At block level, it has dairy extension service units headed by dairy extension officer. The department is responsible for implenting schemes for dairy development.
- iii) **Kerala Livestock Development Board (KLDB):** In 1963, a Indo-Swiss Project Kerala (ISPK) was constituted under a bilateral agreement between the Government of India and the Swiss Confederation to evolve a new breed of cattle adapted to the local environment in Kerala. In 1976, it got reconstituted as Kerala Livestock Development and Milk Marketing Board (KLD & MMB) under the Companies Act 1956. Commercial activities related to milk & milk products were handed over to Kerala Cooperative Milk Marketing Federation (KCMMF) and the activities of cattle breeding, frozen semen production and distribution, fodder development, training etc. were handed over to Kerala Livestock Development Board (KLDB).
- iv) **Kerala Cooperative Milk Marketing Federation (KCMMF):** It has been formed to :
 - i) channelise marketable surplus milk from the rural areas to urban deficit areas by maximizing the returns to the producer and provide quality milk and milk products to the consumers; ii) to provide constant market and stable price to the dairy farmers for their produce; iii) to carryout activities for promoting Production, Procurement, Processing and Marketing of milk and milk products for economic development of the farming community; and iv) to build up a viable dairy industry in the State.

Different Schemes implemented in Kerala

The ongoing schemes with government fundings can be classified into two categories viz.

- A. Central Schemes for animal husbandry and dairy development;
- B. States Schemes for animal husbandry and dairy development;

ANIMAL HUSBANDRY & DAIRY DEVELOPMENT

A. CENTRAL SCHEMES FOR ANIMAL HUSBANDRY AND DAIRY DEVELOPMENT

Central Scheme :		
National Livestock Health and Disease Control Programme (LH & DC)		
A.1	Assistance to States for Control of animal disease	This Centrally Sponsored Scheme is implemented in 60:40 ratio of central and state funding. It is aimed to control livestock diseases through mass vaccination and by creating awareness on diseases. Besides this, the programme monitors and compiles information on incidence of various livestock diseases. It also strengthens existing Disease Diagnostic Laboratories and Veterinary Biological Production Units.
A.2	National Project on Rinderpest Surveillance & Monitoring (NPRSM)	It is a 100 per cent centrally sponsored project launched w.e.f. May, 1992 to combat highly infection viral "Rinderpest" disease of Cloven footed Animals (generally called cattle plague). India has been already declared provisionally free from the disease w.e.f. from 1 st March, 1998.

A.3	Foot & Mouth Control Programme (FMD-CP)	To prevent economic losses due to Foot and Mouth Disease and to develop herd immunity in cloven-footed animals, a location specific programme called 'Foot and Mouth Disease Control Programme (FMD-CP)' is currently being implemented by Gol wherein 60 per cent central funding is provided and the remaining 40 per cent is shared by state govt.
A.4	Establishment & Strengthening of Existing Veterinary Hospitals and Dispensaries (ESVHD)	Under this programme, the expenditure for establishment of veterinary healthcare and strengthening of existing hospitals and dispensaries is shared between Gol and States in 50:50 ratio. It includes renovation of existing building ,purchase of equipment and construction of new ones.
A.5	National Animal Disease Reporting System (NADRS)	The Gol has put in place a pan-India system for monitoring outbreak of animal diseases. The system is being implemented through National Informatics Centre (NIC) and the Gol provides 100 per cent support to the States for meeting expenditure on monitoring animal diseases and dissemination of corresponding information. Even Animal Disease Diagnostic Laboratories across India are linked with NADRS capturing the data related to samples received, tested and results obtained.
A.6	Brucellosis Control Programme (Brucellosis-CP)	Brucellosis is an economically important reproductive disease of livestock. It can be prevented over a period of time by one time vaccination of all eligible female calves. Gol is providing 60 per cent assistance and the remaining 40 per cent is covered by the state.
National Livestock Mission		
B.1	Sub-Mission on Livestock Development	The existing insurance scheme in Kerala has been revised to align with Gol's "Risk Management & Insurance" scheme under this sub-mission. In case of dairying, the Gol subsidize dairy animal insurance premium upto 5 animals per household by 25 per cent, state pay 25 per cent and balance is borne by the beneficiary (50 per cent). This sub-mission has a new component "Modernization & Development of Breeding Infrastructure" for setting up state-of-art model farms as well as strengthening existing breeding infrastructure of State & University farms on cost sharing basis (75 per cent Gol & 25 per cent state). In Kerala, this activity has been taken up vigorously.
B.2	Sub- Mission: Fodder and Feed Development	In Kerala, it is implemented as "National Fodder Production Programme" with 25 per cent state share and 75 per cent central assistance. It aims at conversion of grasslands to fodder plots for good quality fodder. In addition, fodder production is promoted in departmental farms.
B.3	Sub- Mission: Skill Development Technology Transfer & Extension	It strengthens regional and district training centers to deliver a range of trainings with appropriate modules, manuals, training materials, reference materials, posters, leaflets, documentary films etc. It also envisages to disseminate the information through various means like Electronic/ Print Media, Melas etc
Animal Husbandry Statistics		
C.1	Integrated Sample Survey (ISS)	The ISS is conducted every year for estimation of various livestock products as per the guidelines of IASRI. The cost of about ₹ 2.25 crore is shared by Gol & State on 50:50 basis. The expenses also cover special studies of AH sector.

Livestock Census		
D.1	Livestock Census	With 100 per cent central assistance, the state has completed 19 th Livestock Census in 2012. The results have been published and relevant portions have been uploaded in the website.
National Programme for Bovine Breeding & Dairy Development (NPBDD)		
E.1	National Programme for Dairy Development (NPDD)	The "Assistance to Cooperative" component of NPDD provides grant-in-aid on 50:50 basis to bring more farmers under the dairy co-operative sector and enable them to comply with FSSAI 2006, improve the facilities for testing the chemicals and microbial of milk and strengthening and modernization of infrastructure of DCS to improve procurement/marketing etc.
E.2	National Dairy Plan Phase-I (NDP-I)	In order to increase productivity of milch animals and to provide a greater access to the organised milk-processing sector to rural milk producers, NDP-I is being implemented in Kerala. The scheme provides 100 per cent grant-in-aid for animal nutrition & breeding activities, and 50 per cent grant on cost of capital items for village-village based milk procurement system.
RASHTRIYA KRISHI VIKAS YOJANA (RKVY)		
F.1	Assistance to ensure the Hygienic requirements at farm level	Under this scheme, assistance is provided to create awareness among dairy farmers regarding importance of hygienic milk production so as to produce high quality milk suitable for value addition. It would ensure better price to farmers.
F.2	NIRAVU	The scheme envisages 50 per cent assistance for the installation of Automatic Milk Collection Station in 10 Dairy Co-Operatives of Pala constituency for speedy and transparent collection of milk.
F.3	Godhanam	The scheme envisages providing assistance to those farmers rearing one cow for the purchase of a second cow so as to ensure continuous milk production is possible. 156 farmers in the constituency of Kottackal, Koothuparambu, Pala and Kalpetta are beneficiaries of the project.
F.4	Assistance for purchase of Milking machines	The scheme envisages to install 63 milking machine to be implemented in N Paravur, Kottackal, Balussery & Thodupuzha of the state.
F.5	Heifer rearing Units	It is envisaged to introduce good quality heifer units of 2 animal size in the constituencies of N. Paravur, Perambara & Balussery of the state.
F.6	2 Cow Mini Dairy Units To "1 Lakh Youth Programme" Beneficiaries	This scheme aims to provide self employment opportunities as well as livelihood for the rural youth. The pattern of assistance is 12.5 per cent RKVY: 37.5 per cent State: 50 per cent Beneficiary Contribution.
F.7	Haridhara Project	The project envisages providing assistance to 100 SC/ST member of Killi Pattikajathi Pattika Varga Service Cooperative Bank to take up dairy farming.

Special projects		
G.1	Wayanad Package	An Integrated Milk Shed Development Programme has been floated to strengthen dairying in Wayanad District. The project aims to install 100 Automatic Milk Collection Unit, provide housing for 1,000 cattle by constructing 1,000 Nos. scientific cattle sheds, establish 5 commercial Hydroponic fodder machine, provide common Hydroponic fodder machine, construct 10 feed/fodder bank to store low cost wet feeding material, construct 500 Nos. of Biogas plants, install a mobile testing lab, arrange for 20 goods vehicles for transportation of milk and feeds, provide assistance to 50 dairy co-operatives for purchase/repair/renovation of milk testing equipment, construction of Hygienic Milk Collection Centers, construct a 300 TPD cattle feed plant in Wayanad District, provide Cattle Insurance Scheme for 10,000 bovines, extend Cattle Feed Subsidy for 6,850 MT to Dairy Farmers pouring milk in society, care and management of 7,700 pregnant cows, provide one additional milch cows for 4,000 dairy farmers (Godhan), establish 100 new dairy farms of 5 milching cow each, establish 3,650 Heifer Rearing Units, assist 250 dairy farmers for farm mechanization, adopt 7,000 cross bred calves and feed them with adequate quantities of calf starter, mineral mixture, vitamin A supplement and cattle feed, establish 250 Hi-Tech Fodder farm using the technology of open type precision farming.
G.2	Idukki Package	The project plans to bring 350 hectare of land under perennial fodder cultivation and encourage Azolla cultivation in Idukki district. Under the scheme, fodder seed minikits are being supplied, assistance is extended for installation of Hydroponic Fodder Production Units at DCS level. The farmers are trained in latest commercial fodder cultivation and preservation. The assistance provided will also be utilized mechanization and preservation of fodder in farmer's field.
G.3	13th Finance Commission Award	Under the 13 th Finance commission award, the department of Dairy Development has been sanctioned the scheme, "Automation and Networking of Dairy Cooperatives Societies and Dairy Department", aims at developing and institutionalizing an information technology interface for the offices of the Department of Dairy Development in Trivandrum, Kollam Kottayam and Kasaragode districts and the dairy co-operatives functioning in these districts at a total outlay of ₹ 10.00 Crores. Major components of the scheme includes installation of hardware, training for society personnel and other miscellaneous expenses for linking 788 DCS and 49 institutions under the department. The proposal aims for establishing an efficient management information system.



B. STATE SCHEMES FOR ANIMAL HUSBANDRY AND DAIRY DEVELOPMENT

ANIMAL HUSBANDRY		
A.1	Veterinary Extension	<p>The scheme aims to strengthen six Livestock Management Training Centres and one Poultry Training Institute to cater the needs of the farmers and to update knowledge of staff working under the department. The key components of the scheme are given below :</p> <p>Component of the scheme Capacity building programmes including deputations for higher studies &TA Awareness programmes, camps, exhibitions, calf rallies, study tours, awards and awareness materials SREP work plan Assistance to research and research-extension interface Multimedia extension kits, Touch screen kiosk and Television based extension programmes, Operational cost and maintenance of infrastructure, Scaling up of successful models, Strengthening infrastructure facilities at Veterinary council for HRD, Awareness Programmes for school students, School Animal Husbandry Clubs, Entrepreneurship Development Programmes (EDP), Strengthening of training centres including RAICs, Farmers registration, Training programmes for Officers in national level reputed organizations including IIM, ASCI, IRMA, ICAR Institutions, NDDDB, MDP at SAMETI etc.</p>
A.2	Strengthening of Veterinary Services	<p>The scheme is to tone up veterinary services and institutions to provide round the clock services. About ₹ 40 crores per annum are spent to strengthen the infrastructure for Veterinary Institutions and Labs including provision for modern equipments and diagnostic aids, purchase of medicines, feed supplements, vaccination programme, ABC etc. The key components of the scheme are :</p> <ul style="list-style-type: none"> • Infrastructure development for veterinary services • Procurement of medicines • Mastitis control programme • Animal welfare programmes • Conduct of camps, vaccination and squads • Operational costs • Need based facility support for veterinary services excluding recurring costs • Strengthening of veterinary poly clinics/VH/VD • Upgradation of labs and need based support including completion of selected components approved under One Time ACA of 2014-15 • AMC and Insurance of equipment • Sero surveillance monitoring on diseases of zoonotic importance • Disease mapping through GIS • Animal disease control Zone (Goreksha Programme) • Calf care kit
A.3	Biological Production Complex	<p>The Institute of Animal Health and Veterinary Biologicals is being upgraded to meet GMP Standards, improve production and preservation of ongoing vaccines, strengthen research and development activities, diagnostic reagents, pharmaceuticals, antibiotic sensitivity test kits etc., manufacture of new products etc. To this end, a budgetary provision was made for ₹ 4.5 crore in 2015-16.</p>

A.4	Expansion of Cross Breeding Facilities	With a view to systematic upgradation of cross bred stock through cross breeding services, this scheme propose to spend about ₹ 9 crore per annum for : <ul style="list-style-type: none"> • Purchase of about 16 lakh doses of frozen semen • Mineral mixture supplement programme and deworming of milch cows • Strengthening of cattle sterility office, Aluva and strengthening of Veterinary sub-centres • Purchase of equipment for AI facilities • Assistance to LSGIs for construction / modernization of buildings to sub centres. • Infertility management Programme
A.5	Special Livestock Breeding Programme	In Kerala, priority has been accorded to reduce the age of maturity and inter calving period by enrolling thousands of calves under the scheme. About ₹ 45 crore are being sourced from RKVY, Finance Commission Award, LSGIs and State Plan to finance this scheme.
A.6	Strengthening of Department Farms and Conservation	Earlier, departmental farms were viewed as production units and breeding units to supply quality young ones. Now funds to the tune of ₹ 20 crore are spent to upgrade them as centres of demonstration of technologies and training.
A.7	Modernization and e - Governance	In order to harness best of communication technologies, internet and computers are being provided to all District Animal Husbandry Offices, District Veterinary Centres, Central Veterinary Stores, IAH&VB, Palode, CDIO Palode, all farms, RAICs, SLBP offices, LMTCs etc by spending about ₹ 2 crore per annum.
A.8	Assistance to Kerala Veterinary and Animal Science University	The Veterinary and Animal Science faculty has been delinked from the Kerala Agricultural University and new University "Kerala Veterinary & Animal Science University" (KVASU) has been formed. It has "College of Veterinary and Animal Sciences" at Mannuthy and Pookode (in Wayanad), and "College of Dairy Science and Technology" at Mannuthy.
A.9	Implementation of priority schemes under the Kerala Perspective Plan 2030	Kerala State Planning Board has prepared a Perspective Plan (KPP 2030) after extensive consultations with various stakeholders. In order to translate the ideas and concepts suggested in the KPP 2030 into implementable action plans, a provision of ₹ 1 crore is available for animal husbandry sector.

DAIRY DEVELOPMENT		
B.1	Rural Dairy Extension And Advisory Services	Rural Dairy Extension & Advisory Services Programme includes need based On-Campus and Off-Campus Extension Training Programmes, advisory services on setting up of dairy farm, scientific dairy farming and fodder cultivation, organising a state level DAIRY EXPO, awareness programme on quality related aspects of milk, preparation & distribution of extension literature, specific training programmes related to topics like eco-friendly and pollution free dairying activities, establishing biogas, exposing farmers to new innovations in dairying field, FSSAI aspects in dairying, visit/tour programme, best farmer awards, extending skill development training programme for youth, celebration of World Milk Day, extending contingency fund to 1,300 odd dairy farmers who have incurred financial loss due to death/productivity related issues due to outbreak of FMD and other diseases. The benefit of the programme reaches the dairy farmer through about 3,667 village Dairy Co-operative Societies distributed throughout the state.
B.2	Commercial Dairy & Milkshed Development Programme	Under this scheme, activities have been undertaken for implementing "INTEGRATED DAIRY DEVELOPMENT PROGRAMME FOR ERNAKULAM AND KOLLAM DISTRICTS" wherein the focus is on bringing more farmers/entrepreneurs, Self Help Groups into the sector and to maintain the productivity of crossbred cow and to create awareness to the farmers in adopting scientific management in cattle farming. In the wake of FSSAI, awareness is being created for hygienic milk production and in order to obtain quality milk, assistance is provided for purchasing an extra animal, starting mini dairy units with 2 milch animals, 5 milch animals, 10 milch animals, heifer rearing units. Moreover, assistance for purchasing milking machine, cattle shed construction/renovation are envisaged through this programme. Apart from the traditional and ongoing schemes, this project envisages giving assistance to elite/progressive dairy farmers who rear 5 or more milch animals for undertaking projects for energy conservation systems by establishing bio-gas units, for cow comfort – minimizing environmental stress and maximizing productivity of cattle, for installing scientific cattle housing systems etc. The programme is also aimed at improving the fodder development activities of the district by bringing more area under fodder cultivation, mechanization and modernization of fodder activities, establishing fodder-cum-azolla nursery, establishing vermin-compost units, silage making units etc. This is expected to decrease the production cost and thereby increasing the profitability of dairy farming. This will add to the socio-economic uplift of dairy farmers of the beneficiary districts
B.3	Cattle Feed Subsidy	KCMMF survey has pegged the cost of milk production at ₹ 28 per litre in Kerala and farmgate price at ₹ 30 to 32 per litre of milk. In order to encourage dairy farmers, a cattle feed subsidy at the rate of ₹ 1/- is paid per litre of milk poured at the DCS. It is expected that 10,000 more farmers would come under dairy co-operative umbrella.

B.4	Assistance to Dairy Co-Operative Societies	It aims at modernisation of Dairy Co-operatives to improve the credibility of dairy cooperative societies; improve milk quality, increase automate milk collection at society level, speed up the entire milk collection process, increase transparency and speedy payment of milk poured, establish direct communication channel between Dairy Development Department and DCS, introduce dairy farmers facilitating cum information centres, enable DCS take up new ventures, using ICT to provide dairy advisory & extension services to farmers, strengthen the cattle feed stores of the DCS, make the DCS as a village knowledge centre.
B.5	Production & Conservation Of Fodder In Farmers Fields And By Dairy Co-Operatives	<p>While animal body size & weight is increasing in Kerala due to cross-breeding, agriculture is shifting from traditional crop to cash crops. As a result, Kerala produces only about 40 per cent of the roughages required for cattle and situation is deteriorating. Hence, the scheme has been introduced. It also includes "Hi-Tech Fodder Development Programmes" & "Farm Mechanization". In addition, following measures are being undertaken :</p> <ul style="list-style-type: none"> • Propagation of high yielding and disease resistant variety of fodder variety like CO 3, CO 4, Killikulam, COGG3 etc • Popularizing the use of legumes for cattle feeding • Use of alternative protein rich fodder sources like Azolla • Popularizing the cultivation of fodder trees like Gliricidia, Sesbania, Subabul, Agathi etc • Mechanization of fodder cultivation activities like land preparation, sowing/planting, irrigation activities, weeding, fertiliser applications, harvesting etc • Introducing Hydroponic Techniques in Fodder Development • Popularizing Fodder Preservation techniques like hay making and silage making • Popularizing value addition in the sector like vermi compost technique • Introducing energy conservation in dairying like bio-gas generation technique • Assistance to Massive Fodder cultivation units • Projects to utilize barren land for fodder cultivation • Linkage with MNREGS programme for fodder cultivation activities.
B.6	Strengthening Quality Control Labs	The scheme envisages in ensuring quality of milk, establish permanent milk testing stations, modernisation and strengthening of existing laboratories in the state and to create new testing labs, accreditation of existing laboratories under IS 17025 (NABL), improve the infrastructure and facilities of State Dairy Lab to function as nodal, establish regional labs at Kasargod and Kottayam, improve testing facility at DCS with Bulk Milk Chilling Centres (BMCC), assist DCS for purchasing BMCC, cleaning and sanitising agents etc.
B.7	Assistance To Kerala Dairy Farmers Welfare Fund Board For Insurance Coverage	The Kerala Dairy Farmers Welfare Fund Board (KDFWF) collects contributions from the primary Dairy Cooperatives and gives monthly pension to the dairy farmers, above 60 years of age and implements other welfare schemes. In addition to the pension scheme, KDFWF covers death due to accidents, physical disability from accidents, and coverage for contagious diseases, snake bites, against injuries sustained to farmers during care of animals etc.



GLOSSARY

AI	: Artificial Insemination is the process of deliberate introduction of sperm into the female reproductive tract for impregnation.
Bovine	: Large ruminants like cattle, buffaloes, yak and mithun.
Breedable	: Female animals that have attained the age of puberty.
Breeding Tract	: Area where breeds/group of animals are found.
Calving Interval	: Period between two calvings.
Castration	: Technique by which males are made sterile for use in draught operations.
Crossbred	: Animal produced by hybridization of two different breeds.
DM	: Dry biomass available from feed and fodder.
Dry Animal	: Adult animals calved at least once but not in-milk at present.
Food Grains	: Cereals and pulses.
GSDP	: Basic measure of a State's overall economic performance. It represents the market value of all final goods and services made within the borders of a State in a year.
Indigenous Animals	: Animals native to a particular area.
In-milk Animals	: Animals which are lactating.
Irrigation Intensity	: $(\text{Gross irrigated area}/\text{Net irrigated area}) * 100$.
Lactation Length	: Number of days the animal secretes milk.
Lactation Yield	: Total milk production over period of 300/305 days.
Literacy Rate	: Percentage of literates in the age group above six years.
Livestock	: Domesticated mammals.
Male to Female Ratio	: Number of males to females.
Milch Animals	: Sum of in-milk and dry animals.
Milk Utilisation Pattern	: Quantities of milk retained for home consumption in liquid form, retained for product conversion and milk sold by the milk producers.
Marginal Holdings	: Farmers possessing less than one hectare of operational holding.
Small Holdings	: Greater than one hectare and less than two hectare of operational holding.
Semi Medium	: Greater than two and less than four hectare of operational holding.
Medium Holdings	: Are more than four and less than ten hectare of operational holding.
Large Holdings	: Are those larger than ten hectare of operational holding.
Population Density	: Number of human beings/animals per square km of geographical area.
Poultry	: All categories of chicken, guinea fowls, turkey, ducks and quails.
Sex Ratio	: Number of females to 1,000 males in a population.
Small Ruminants	: Sum of sheep and goats.
Urbanisation	: Per cent of urban population to total population.
Wet to Dry Ratio	: Number of in-milk to dry animals.



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