

CHAPTER IV AGRICULTURE AND IRRIGATION *

Land Utilisation

Part I, Page 584, Add before soils :

OUT of the total geographical area of 1,91,791 sq km, the land-use statistics are available for 1,90,050 sq km (1991-92) constituting 99.1 percent of the total area. The area for which data on the land use classification is available, is known as the reporting area. The reporting area is the area according to village papers or records maintained by the village revenue authorities. In Karnataka, cropped area is recorded survey numberwise in Record of Rights, Tenancy and Crop inspection (RTC) by the village accountant and consolidated at village, at taluk and district levels. The difference between the area according to the professional survey and the area according to village papers is due to the existence of non-reporting areas for which village Records are not available. The 'arable land' would comprise the 'net area sown' plus the 'current fallows' and 'other fallow land'. Similarly, 'Potential land' available for cultivation would include besides the 'arable land', the land under 'culturable waste', 'permanent pastures and grazing land' and 'miscellaneous tree crops and groves not included in the net area sown'. The percentage of arable land during 1990-91 in Karnataka (64%) was more than that of India (50%) and World (10%). The reporting area has increased from 185.4 lakh ha in 1955-56 to 190.5 lakh ha in 1989-90. The land utilisation statistics in Karnataka for selected years for the State (districtwise) and the districtwise arable land and percentage distribution in Karnataka are given in table nos. 4.1,4.2 and 4.3

* This chapter also includes sections on Horticulture, Animal Husbandry and Fisheries.

Table No. 4.1 Land utilization in Karnataka (1955-56 to 1990-91) - Area in thousand hectares

Sl.No.	Land-use classification	1955-56	1960-61	1965-66	1970-71	1975-76	1980-81	1985-86	1990-91	1991-92
1.	a) Geographical area	19,188	19,190	19,310	19,135	19,177	19,177	19,179	19,179	19,179
	b) Reporting area for land utilization	18,543	18,780	18,907	18,943	19,116	19,050	19,050	19,050	19,050
2.	Forest	2,707	2,709	2,688	2,890	2,901	3,033	3,057	3,074	3,075
3.	Not available for cultivation									
	a) Land put to non-agricultural uses	853	812	865	937	994	1,067	1,158	1,189	1,192
	b) Barren and uncultivable land	844	923	931	839	872	844	803	799	801
	Total (a+b)	1,697	1,734	1,796	1,776	1,866	1,911	1,962	1,987	1,993
4.	Other uncultivated land:									
	a) Permanent pastures and other grazing land	1,744	1,739	1,706	1,619	1,515	1,346	1,164	1,098	1,097
	b) Land under miscellaneous tree crops and groves not included in net area sown	374	366	369	311	323	342	342	317	316
	c) Cultivable waste land	621	656	628	615	585	502	469	446	445
	Total (a+b+c)	2,739	2,762	2,702	2,545	2,422	2,190	1,975	1,861	1,858
5.	Fallow land									
	a) Fallow other than current fallow	666	513	681	672	618	558	466	457	431
	b) Current fallow	669	835	998	811	950	1,459	1,418	1,290	984
	Total (a+b)	1,335	1,348	1,679	1,483	1,567	2,017	1,884	1,747	1,415
6.	Net area sown	10,065	10,228	10,042	10,248	10,360	9,899	10,172	10,381	10,709
7.	Area sown more than once	332	359	389	639	799	761	974	1,378	1,684
8.	Total cropped area	10,398	10,588	10,431	10,887	11,159	10,660	11,146	11,759	12,393

Source :1) Statistical Abstract of Karnataka 1976-77, 1983-84 and 1988-89 DES, Bangalore;

2) Karnataka Economic Review, 1990-91 and 1991-92 DES, Bangalore

Table No. 4.2 Land Utilisation in Karnataka, Districtwise, 1990-91

Sl.No.	Item	Area in '000ha								
		Bangalore	Bangalore Rural	Belgaun	Bellary	Bidar	Bijapur	Chikmagalur	Chitradurga	Dakshina Kannada
1.	a) Geographical area	220	580	1,340	990	540	1,710	720	1,090	840
	b) Reporting area for land utilization	217	585	1,344	956	542	1,712	722	1,016	834
2.	Forest	3	81	190	119	25	83	201	91	226
3.	Not available for cultivation									
	a) Land put to non-agricultural uses	48	44	68	80	19	58	41	60	86
	b) Barren and uncultivable land	9	38	44	60	22	51	28	30	72
	Total (a+b)	57	82	112	140	41	109	69	90	158
4.	Other uncultivated land									
	a) Permanent pastures and other grazing land	9	48	25	7	14	13	106	119	32
	b) Land under miscellaneous tree crops and groves not included in net area sown	9	14	1	4	12	2	21	19	91
	c) Cultivable waste land	4	6	13	30	19	7	21	27	70
	Total (a+b+c)	22	68	39	41	45	22	148	165	193
5.	Fallow land:									
	a) Fallow other than current fallow	6	11	9	4	39	15	14	37	21
	b) Current fallow	31	45	97	34	35	127	6	45	17
	Total (a+b)	37	56	106	38	74	142	20	82	38
6.	Net area sown	98	298	897	618	357	1,356	284	588	219
7.	Area sown more than once	4	9	96	100	80	123	36	123	80
8.	Total cropped area	102	307	993	718	437	1,479	320	711	299

Source: Karnataka at a Glance, 1991-92 DES No. 70/1992

contd..

Sl.No.	Dharwad	Gulbarga	Hassan	Kodagu	Kolar	Mandya	Mysore	Raichur	Shimoga	Tumkur	UttaraKannada	State Total
1 a)	1,340	1,620	680	410	820	500	1,200	1,400	1,060	1,060	1,030	19,180
b)	1,378	1,610	663	411	780	498	1,246	1,388	1,058	1,065	1,025	19,050
2	115	68	54	135	70	24	338	48	328	45	830	3,074
3 a)	61	54	72	23	74	61	86	59	97	81	17	1,189
b)	22	63	32	31	63	22	67	37	20	68	20	799
(a+b)	83	117	104	54	137	83	153	96	117	149	37	1,918
4 a)	19	41	52	18	118	41	92	33	186	105	20	1,098
b)	2	2	6	38	15	3	11	14	27	20	5	316
c)	7	12	23	12	13	40	34	14	20	66	8	446
(a+b+c)	28	55	81	68	146	84	137	61	233	191	33	1,860
5 a)	11	20	36	1	13	24	44	58	36	51	7	457
b)	169	192	45	5	41	43	93	169	19	72	5	1,290
(a+b)	180	212	81	6	54	67	137	227	55	123	12	1,747
6	972	1,158	343	148	373	240	481	956	325	557	113	10,381
7	156	149	24	3	19	37	80	164	55	23	17	1,378
8	1,128	1,307	367	151	392	277	561	1,120	380	580	130	11,759

Source : Karnataka at a Glance 1991-92 DES No. 70/1992

Table No. 4.3
Districtwise arable land and percentage distribution in Karnataka
1990-91

Area in lakh ha.

Sl. No.	District	Geographical area	Net area sown (NAS)	% of NAS to geographical area	Gross area sown	Area sown more than once ASMO	% of ASM to NAS	Fallow land	Net arable land for Agril. crops	% of arable land to geographical area
1.	Bangalore	2.17	0.98	45	1.02	0.04	4	0.37	1.35	62
2.	Bangalore Rural	5.85	2.98	51	3.07	0.09	3	0.56	3.54	61
3.	Belgaum	13.44	8.97	67	9.93	0.96	11	1.06	10.03	75
4.	Bellary	9.56	6.18	65	7.18	1	16	0.38	6.56	69
5.	Bidar	5.42	3.57	66	4.37	0.8	22	0.74	4.31	80
6.	Bijapur	17.12	13.56	79	14.79	1.23	9	1.2	14.98	88
7.	Chikmagalur	7.22	2.84	39	3.2	0.36	13	0.2	3.04	42
8.	Chitradurga	10.16	5.88	58	7.11	1.23	21	0.82	6.7	66
9.	Dakshina Kannada	8.34	2.19	26	2.99	0.8	37	0.38	2.57	31
10.	Dharwad	13.78	9.72	71	11.28	1.56	16	1.8	11.52	84
11.	Gulbarga	16.1	11.6	72	13.07	1.49	13	2.12	13.7	85
12.	Hassan	6.63	3.43	52	3.67	0.24	7	0.81	4.24	64
13.	Kodagu	4.11	1.48	36	1.51	0.03	2	0.06	1.54	37
14.	Kolar	7.8	3.73	48	3.92	0.19	5	0.64	4.27	55
15.	Mandya	4.98	2.4	48	2.77	0.37	15	0.67	3.07	62
16.	Mysore	12.46	4.81	39	5.61	0.8	17	1.37	6.18	60
17.	Raichur	13.88	9.56	69	11.2	1.64	17	2.27	11.83	85
18.	Shimoga	10.58	3.25	31	3.8	0.55	17	0.55	3.8	36
19.	Tumkur	10.65	5.57	52	5.8	0.23	4	1.23	6.8	64
20.	Uttara Kannada	10.25	1.13	11	1.3	0.17	15	0.12	1.25	12
State Total		190.5	103.8	54	117.6	13.78	13	17.47	121.28	64

Source: Karnataka at a Glance 1991-92 DES No. 70/1992

Agricultural Workers

See Part I, page 590 after Hind para:

According to provisional results of the 1991 census, out of the total population of 44,806,468 persons, 18,744,445 have been counted as workers and the remaining are non-workers. Among workers, 19.9 percent belong to main workers and the rest to marginal workers. Only 1.06 percent of the male workers are marginal workers whereas 21.32 percent of the female workers are shown as marginal workers; 34.36 percent of main workers in the State are cultivators, 28.75 percent are agricultural labourers, 2.81 percent are engaged in household industry and 34.08 percent are engaged in 'other work'. The total number of main workers among males amounted to 12,186,096 and among females only 5,057,787. There are more female agricultural labourers than males. Almost half of the female workers in the State are agricultural labourers whereas only 19 percent of the male workers are agricultural labourers. Cultivators and agricultural labourers are found predominantly in rural areas. Although agricultural land is of considerable importance in every district, in certain districts labour intensive wet farming is predominant, whereas in certain others, dry farming is important. In certain districts, the chief agricultural produce does not fall within the ambit of cultivation as classified by the census.

The proportion of cultivators exceeds 50 percent in Mandya, Tumkur and Hassan districts. It is less than 30 percent in Bangalore, Dakshina Kannada, Kodagu and Bidar districts. The small proportion of cultivators in Bangalore (5.89%) is due to urbanisation. Dakshina Kannada and Kodagu are also special cases since the coastal district is known for fishing and Kodagu for its coffee, orange and cardamom plantations which do not come under the purview of cultivation. The *per capita* land availability for cultivation is also low. The proportion of agricultural labourers among main workers is the least in Bangalore dt (4.63%) and highest in Bidar dt (45.43%). The percentage of female agricultural labourers is twice the percentage of male in almost all the districts and in Bangalore dt it is almost three times the percentage of male agricultural labourers. The highest percentage of women workers engaged in agricultural labour are in the following districts: Bellary (62.21), Bidar (70.65), Bijapur 68.71, Gulbarga 70.53 and Raichur 73.19 percent. The proportion of 'other workers' is as high as 86.69 percent in Bangalore dt and is above 60 percent in the districts of Dakshina Kannada and Kodagu. In the State, there are more female agricultural labourers than male agricultural labourers. In northern Karnataka, larger proportion of workers are agricultural labourers. Districtwise distribution of workers is given in table no. 4.4 and agricultural workers as per 1991 census (final) is given in table no. 4.5

Table No. 4.4

Districtwise percentage distribution of agricultural workers

<i>Sl. District No.</i>	<i>M W to Tot pop</i>	<i>Mg W to Tot pop</i>	<i>Proportion of Cl to M W</i>	<i>Ag L to M W</i>	<i>O W to M W</i>
1. Bangalore	33.79	0.48	5.98	4.63	86.69
2. Bangalore Rural	37.37	5.10	49.88	21.44	24.69
3. Belgaum	37.24	4.89	40.93	29.64	54.40
4. Bellary	42.84	2.10	32.88	41.45	23.36
5. Bidar	37.21	2.65	29.66	45.43	22.80
6. Bijapur	38.03	3.65	31.81	42.93	21.15
7. Chikmagalur	40.59	4.51	36.00	24.64	37.30
8. Chitradurga	38.79	4.17	37.23	31.98	27.63
9. Dakshina Kannada	41.28	1.82	19.72	16.01	62.23
10. Dharwad	38.59	3.37	30.04	39.10	27.35
11. Gulbarga	40.24	2.89	30.66	44.11	22.91
12. Hassan	37.75	6.42	57.09	14.57	26.44
13. Kodagu	44.87	1.93	20.07	15.18	63.82
14. Kolar	39.89	3.20	46.86	26.06	25.09
15. Mandya	38.76	5.17	53.35	24.78	20.05
16. Mysore	37.44	2.31	37.74	27.89	31.55
17. Raichur	42.01	2.40	33.14	45.13	19.31
18. Shimoga	37.83	2.88	37.86	35.11	24.63
19. Tumkur	39.96	7.41	54.56	21.07	20.84
20. Uttara Kannada	35.08	3.58	33.10	19.14	45.36
State Total	38.48	3.35	34.36	28.75	34.08

Note : M W = Main workers, Tot Pop = Total Population Mg W = Marginal workers, Ag L = Agricultural labourers, O W = Other workers, (includes plantation wokers also) Cl = Cultivators. Source : Census of India, 1991 series-II Provisional Population Totals.

**Table No. 4.5 Agricultural workers in Karnataka as per 1991 Census
(Final)**

<i>Sl. Particulars No.</i>	<i>Total</i>	<i>Males</i>	<i>Females</i>
A. All Areas			
1. Total Main Workers	17,292,117	12,285,340	5,006,777
2. Cultivators	5,95,633	4,628,033	1,287,600
3. Agricultural labourers	4,999,959	2,512,301	2,487,658
4. Animal Husbandry and Plantation workers	616,733	467,135	149,598
B. Rural Areas			
1. Total Main workers	12,919,726	8,714,434	4,205,292
2. Cultivators	5,657,082	4,411,379	1,245,703
3. Agricultural labourers	4,642,907	2,303,813	2,339,094
4. Animal Husbandry and plantation workers	540,058	400,602	139,456
C. Urban Areas			
1. Total Main workers	4,372,391	3,570,906	801,485
2. Cultivators	258,551	216,654	41,897
3. Agricultural labourers	357,052	208,488	148,564
4. Animal Husbandry and Plantation workers	76,675	66,533	10,142

Add to Part I, page 591, before Development of Land Resources :

Consolidation of Holdings

The Fifth Agricultural Census was undertaken in the State during 1991-92 with agricultural year 1990-91 as the reference period. The Fifth Census has revealed that there were as many as 57.76 lakh operational holdings in the State as against 49.19 lakhs in the previous Census *ie* 1985-86. As in the previous Census there was a decline in the case of large holdings (15.4%) and medium holdings (1.5%) during this Census also. The distribution of the number of operational holdings and area operated by size groups for the years 1990-91 (provisional) versus 1980-81 and 1985-86 is given in table no. 4.6

Table 4.6 Distribution of land holdings by size 1980-81, 1985-86 and 1990-91

Size of holdings (in hectares)	1980-81		1985-86		1990-91 (P)		Percentage variation			
	No. of holdings (in '000)	Area in (000 ha.)	No. of holdings (in '000)	Area in (000 ha.)	No. of holdings (in '000)	Area in (000 ha.)	1985-86 over 1980-81 (No)	(Area)	1990-91 over 1985-86 (No)	(Area)
1	2	3	4	5	6	7	8	9	10	11
Marginal below 1.0	1489 (34.6)	733 (6.3)	1792 (36.4)	866 (7.3)	2262 (39.2)	1072 (8.7)	20.3	18.1	26.2	23.7
Small between 1.0 to 2.0	1057 (24.5)	1543 (13.1)	1293 (26.3)	1889 (15.9)	1586 (27.5)	2308 (18.7)	22.3	22.4	22.7	22.2
Semi Medium between 2.0 to 4.0	918 (21.3)	2572 (21.9)	1035 (21.0)	2879 (24.2)	1163 (20.1)	3200 (26.0)	12.7	11.9	12.4	11.2
Medium between 4.0 to 10.0	662 (15.3)	4018 (34.2)	646 (13.1)	3881 (32.7)	636 (11.0)	3770 (30.6)	-2.4	-3.4	-1.5	-2.9
Large 10.0 and above	183 (4.3)	2880 (24.3)	153 (3.2)	2364 (19.9)	129 (2.2)	1971 (16.0)	-16.4	-17.9	-15.4	-16.6
All sizes	4309 (100)	11746 (100)	4919 (100)	11879 (100)	5776 (100)	12321 (100)	14.1	1.1	17.4	3.7

Note: Figures in brackets indicate percentage to total, P - provisional

As in the earlier Census, during this Census also, marginal holdings dominated the scene, by accounting as much as 39.2% of the total number of holdings followed by small holdings (27.5%); semi-medium holding (20.1%) and medium holdings (11.0%). There has been a slight increase (3.7%) in the area operated from 118.79 lakh ha in 1985-86 to 123.21 lakh ha in 1990-91. The operated area under marginal holdings registered an increase of 23.7% whereas operated area under small and semi-medium holdings registered an increase of 22.2% and 11.2% respectively. But in the case of medium and large holdings operated area has declined by 2.9% and 16.6% respectively over the previous Census.

The average size of the holdings has come down from 2.41 ha in 1985-86 to 2.13 ha in 1990-91. The following table 4.7 gives the average size of holdings in each of the five major size groups during the years 1985-86 and 1990-91.

Table No. 4.7 : Average size of holdings

Size groups	Average size of holdings (ha)	
	1985-86	1990-91
Marginal (1 ha)	0.48	0.47
Small (1-2 ha)	1.46	1.46
Semi-medium (2-4 ha)	2.78	2.75
Medium (4-10)	6.01	5.93
Large (10 ha & above)	15.45	15.52
All sizes	2.41	2.13

Among the districts, Mysore dt accounts for the highest number of holdings (7.6%) of the total number of holdings in the State and Kodagu district for the lowest number of holdings (0.9%). Tables 4.8 gives districtwise number of holdings, area operated and average size in 1990-91.

Table No. 4.8 Districtwise number of holdings and averagesize,1990-91

Sl No. District	Holdings		Area Operated		Average size (ha)
	in '000	%	in '000 ha	%	
1. Bangalore	81	1.4	122	1.0	1.5
2. Bangalore Rural	256	4.4	346	2.8	1.4
3. Belgaum	425	7.3	1,011	8.2	2.4
4. Bellary	236	4.1	638	5.2	2.7
5. Bidar	166	2.9	465	3.8	2.8
6. Bijapur	400	6.9	1,499	12.2	3.8
7. Chikmagalur	155	2.7	305	2.5	2.0
8. Chitradurga	293	5.1	749	6.1	2.6
9. Dakshina Kannada	268	4.6	314	2.5	1.2
10. Dharwad	392	6.8	1,136	9.2	2.9
11. Gulbarga	425	7.4	1,393	11.3	3.3
12. Hassan	328	5.7	432	3.5	1.3
13. Kodagu	55	0.9	170	1.4	3.1
14. Kolar	306	5.3	448	3.6	1.5
15. Mandya	393	6.8	326	2.6	0.8
16. Mysore	437	7.6	608	4.9	1.4
17. Raichur	384	6.6	1,142	9.3	3.0
18. Shimoga	217	3.8	381	3.1	1.8
19. Tumkur	417	7.2	689	5.6	1.7
20. Uttara Kannada	142	2.5	147	1.2	1.0
State Total	5,776	100	12,321	100	2.1

Note : Percentages are in comparison to State figures and have been worked out on the basis of actual figures.

Land Holdings According to Agro-climatic Zones

Five dry zones have accounted for nearly 70% of the total holdings and about 73% of the operated area. Though Northern Dry Zone accounted for about 21% of the total holdings, it covered an operated area of about 32%. On the other hand, Southern Dry Zone covered only about 8% of area against 16% of holdings. The uneven distribution of holdings and area between the north and south dry zones has resulted in north having higher average holdings size (3.2 ha) as compared to south (1.1 ha). The holding sizes are larger in the northern zones. The hilly zone was also having a higher holding size, compared to overall average. The following table no. 4.9 presents number of holdings, operated area and average size according to Agro-Climatic Zones.

Table No. 4.9

Number of holdings, area operated and average size, according to Agro-
Climatic Zones, 1990-91

Sl. No.	Agro-Climatic Zone	Holdings (in '000)	%	Area operated (in '000 ha)	%	Average size (ha)
1.	North-Eastern Transition (NET)	213	3.7	627	5.1	2.9
2.	North-Eastern Dry (NED)	507	8.8	1,632	13.3	3.2
3.	North Dry (NDZ)	1,218	21.1	3,903	31.7	3.2
4.	North Transition Zone (NTZ)	413	7.1	954	7.7	2.3
5.	Central Dry Zone (CDZ)	627	10.9	1,347	10.9	2.2
6.	Eastern Dry Zone (EDZ)	746	12.9	1,063	8.6	1.4
7.	Southern Dry Zone (SDZ)	940	16.3	1,014	8.2	1.1
8.	South Transition Zone (STZ)	414	7.2	651	5.3	1.6
9.	Hilly (HZ)	338	5.8	759	6.2	2.3
10.	Coastal Zone (CZ)	360	6.2	371	3.0	1.0
State		5,776	100	12,321	100	2.1

Note : Percentages have been worked out in comparison with State figures on the basis of actual figures.

Add to part I page 595 after 6th para :

Cropping Pattern and Rotations

Out of 12,115 thousand hectares of total gross cropped area during 1989-90, 48.8 percent of the area was under cereals, 13.6 percent under pulses, 18.7 percent under oil seeds and 8.0 percent under cotton and sugarcane crops. The remaining 11.0 percent of the area was under other crops. Percentage share of area of individual crops to total gross cropped area during 1960-90 is given in table no.4.10. Area under cereals has decreased from 6273 thousand hectares during 1960-61 to 5000 thousand hectares during 1989-90. This was mainly due to decrease in area under jowar and wheat during the said period. However area under cereals has increased by 6.0 percent during 1989-90 over 1980-81.

Area under bajra and wheat crops decreased during 1989-90 as compared to 1980-81. Area under pulses increased from 15.31 lakh hectares during 1980-81 to 16.47 lakh hectares during 1989-90, percentage increase in area being 7.6. Oilseeds registered a record increase in area of 81 percent during 1989-90 over 1980-81. This was mainly due to increase in area under groundnut and sunflower crops. Production of foodgrains (cereals + pulses) was 70.58 lakh tonnes during 1989-90 as against 62.02 lakh tonnes during 1980-81, registering an increase of 13.8 percent. Production of oilseeds was almost doubled during 1989-90 as compared to 1980-81, registering an increase of 113.2 percent. Percentage share of area and production of individual crops to cereals, pulses and oilseeds during 1960-90 is given in table no. 4.11.

Rice, jowar, ragi, maize, bajra and wheat are the cereal crops grown in the State. Rice, jowar and ragi are the major cereals which occupy about 80 percent of the area under cereals in the State. Cereal crops are largely grown in Bijapur, Gulbarga, Raichur, Belgaum, Dharwad, Chitradurga and Mysore districts. These districts account for about 70 percent of the area under cereals in the State. Among the major cereals growing districts, only Bijapur, Raichur and Belgaum district which account for 32 percent of area under cereals registered positive growth rate of yield whereas Dharwad, Bellary, Chitradurga, Gulbarga and Mysore districts registered negative growth rate of yield. This was mainly due to the drought situation prevailed in the State during 1980-81, 1982-83, 1985-86 and 1987-88. Tur and Bengalgram are the important pulse crops which occupy about 45 percent of the area under pulses in the State. Pulses are largely grown in Gulbarga, Bijapur, Bidar and Dharwad districts. These districts account for about 52 percent of the area under pulses in the State. Gulbarga district alone occupies about 23 percent of the area under pulses in the State.

Groundnut and sunflower are the important oilseed crops which occupy about 60 percent of the area under oilseeds in the State. Bijapur, Gulbarga, Raichur, Dharwad, Chitradurga and Tumkur districts occupy about 70 percent of the area under oilseeds in the State.

Cotton is predominantly grown in Dharwad, Raichur, Bellary and Belgaum districts which occupy about 75 percent of the area under the crop in the State. Sugarcane is largely grown in Belgaum, Mandya and Bijapur districts. Belgaum district alone occupies about 40 percent of area under the crop. The cropping pattern in Karnataka from 1960 to 1990 is given in table no. 4.12.

Table No.4.10

Percentage share of area of individual crops to total gross cropped area 1960-90
Area in '000 hectares

Sl.No.Crop		1960-61		1970-71		1980-81		1989-90	
		Area	%	Area	%	Area	%	Area	%
1	2	3	4	5	6	7	8	9	10
1.	Rice	1,028	9.7	1,170	10.7	1,114	10.5	1,183	9.8
2.	Jowar	2,969	28.0	2,224	20.4	1,991	18.7	2,339	19.3
3.	Ragi	996	9.4	1,065	9.8	1,057	9.9	1,167	9.6
4.	Maize	11	0.1	63	0.6	157	1.5	253	2.1
5.	Bajra	500	4.7	562	5.2	564	5.3	514	4.2
6.	Wheat	324	3.1	343	3.1	322	3.0	248	2.0
All Cereals		6,273	59.2	5,971	54.8	5,573	52.3	5,909	48.8
7.	Tur	296	2.8	304	2.8	336	3.2	482	4.0
8.	Bengalgram	158	1.5	163	1.5	140	1.3	224	1.8
All pulses		1,306	12.3	1,445	13.3	1,531	14.4	1,647	13.6
9.	Ground nut	915	8.6	1,027	9.4	790	7.4	1,194	9.9
10.	Sesamum	64	0.6	87	0.8	118	1.1	153	1.3
11.	Safflower	144	1.4	159	1.5	158	1.5	198	1.6
12.	Sunflower	-	-	-	-	38	0.4	581	4.8
All Oilseeds		1,247	11.8	1,398	12.8	1,251	11.7	2,265	18.7
13.	Cotton	984	9.3	1,142	10.5	1,012	9.5	697	5.8
14.	Sugarcane	72	0.7	104	1.0	154	1.4	265	2.2
Total gross cropped area		10,588		10,889		10,660		12,115	

In the course of the three decades, there is a decline in the area under cereals from 59.92 to 48.8%, especially the area under jowar, though area under maize has increased substantially. Pulses and oilseeds have recorded substantial increase and so has sugarcane, but area under cotton has declined. Sunflower has caught the imagination of farmers since the 1980's.

Table No. 4.11
Percentage Share of area and production of individual crops to total cereals, pulses and oil seeds during 1960-90

Sl. Crop No.	Area in '000 hectares				Production in '000 tonnes											
	Area	%	1960-61 Production	%	Area	%	1970-71 Production	%	Area	%	1980-81 production	%	Area	%	1989-90 Production	%
CEREALS																
1. Rice	1,028	16.4	1,328	37.1	1,170	19.6	2,000	38.2	1,114	20.0	2,258	39.5	1,183	20.0	2,373	36.4
2. Jowar	2,969	47.3	1,154	32.3	2,224	37.3	1,565	29.9	1,991	35.7	1,506	26.4	2,339	39.6	1,611	24.7
3. Ragi	996	15.9	754	21.1	1,065	17.8	892	17.1	1,057	19.0	1,064	18.6	1,167	19.8	1,331	20.4
4. Maize	11	0.2	12	0.3	63	1.1	217	4.2	157	2.8	381	6.7	253	4.3	709	10.9
5. Bajra	500	8.0	129	3.6	562	9.4	211	4.0	564	10.1	192	3.4	514	8.7	281	4.3
6. Wheat	324	5.2	77	2.2	343	5.7	130	2.5	322	5.8	174	3.1	248	4.2	125	1.9
All Cereals	6,273		3,578		5,971		5,235		5,573		5,714		5,909		6,512	
PULSES																
7. Tur	296	22.7	92	26.1	304	21.0	153	29.9	336	22.0	125	25.6	482	29.3	182	33.3
8. Bengalgram	158	12.1	55	15.6	163	11.3	76	14.9	140	9.1	63	12.9	224	13.6	75	13.7
All Pulses	1,306		352		1,445		511		1,531		488		1,647		546	
OILSEEDS																
9. Groundnut	915	73.4	448	87.8	1,027	73.5	780	89.1	790	63.2	475	73.1	1,194	52.7	933	67.3
10. Sesamum	64	5.1	11	2.2	87	6.2	27	3.1	118	9.4	40	6.2	153	6.8	49	3.5
11. Safflower	144	11.6	25	4.9	159	11.4	27	3.1	158	12.6	81	12.5	198	8.7	118	8.5
12. Sunflower									38	3.0	16	2.5	581	25.7	235	17.0
All Oil Seeds	1,247		510		1,398		875		1,251		650		2,265		1,386	

Table No.4.12 Cropping pattern 1960-61 to1988-89

(in hundred hectares)

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Year/District	Food Crops									Non-Food Crops						Total Cropped area
	Cereals & Millets	Pulses	Total food grains (3+4)	Sugar cane	Condi- ments & Spices	Fresh Fruits	Vegeta- bles	Other food crops including dry fruits	Total Food crops	Oilseeds Edible	Non- Edible	Fibers	Drugs & Narcotics & Planta- tion crops	Other Non- food crops	Total Non-food crops	
1960-61	61897	12810	74707	727	1989	560	511	249	78743	11404	1742	10223	1232	2534	27135	105878
1965-66	60426	12282	72708	897	1941	569	610	302	77027	11333	1647	10381	1429	2486	27276	104303
1970-71	59178	14345	73523	1024	2058	572	785	291	78253	14238	1024	11724	1514	2115	30615	108868
1975-76	59520	15382	74902	1369	2493	643	884	219	80510	15410	1189	10747	1595	2 140	31081	111591
1980-81	55726	15312	71038	1544	2700	695	979	338	77294	13331	912	10431	2110	2524	29308	106602
1984-85	58402	16454	74856	1720	2593	752	1360	419	81700	20889	870	8623	2373	2141	34896	116596
1985-86	56413	15837	72250	1715	2675	763	1196	428	79027	20200	711	7007	2380	2139	32437	111464
1986-87	62046	16572	78618	1808	2627	766	1174	433	85426	23031	757	4391	2403	2202	32784	118210
1987-88	58250	17742	75992	2025	2567	803	1257	450	83094	28631	737	5017	2386	2591	39362	122456
1988-89	56678	16261	72939	2390	2730	838	1580	457	80934	24557	704	6817	4263	918	37259	118193
Districtwise Breakup																
1. Bangalore	702	123	825	1	5	38	37	1	907	47	5	-	59	34	145	1052
2. Bangalore Rural	1912	457	2369	15	34	73	66	1	2558	398	30	N	285	79	792	3350
3. Belgaum	5140	968	6108	856	144	24	199	3	7334	1652	54	704	343	356	3109	10443
4. Bellary	3465	551	4016	95	117	19	45	-	4292	1670	16	1032	46	4	2768	7060
5. Bidar	1663	1616	3279	182	31	4	17	1	3514	814	10	84	5	3	916	4430
6. Bijapur	8203	1536	9739	282	53	50	165	-	10289	3070	172	680	12	20	3954	14243

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cont'd

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Year/District	Food Crops									Non-Food Crops						
	Cereals & Millets	Pulses	Total food grains (3+4)	Sugar cane	Condi-ments & Spices	Fresh Fruits	Vegeta-bles	Other food crops including dry fruits	Total Food crops	Oilseeds Edible	Non-Edible	Fibers	Drugs & Narcotics & Planta-tion crops	Other Non-food crops	Total Non-food crops	Total Cropped area
7. Chikmagalur	1275	276	1551	21	185	30	38	3	1828	514	8	7	673	1	1203	3031
8. Chitradurga	3290	669	3959	70	83	16	154	-	4282	2266	21	406	67	17	2777	7059
9. Dakshina Kannada	1512	195	1707	39	251	95	87	402	2581	238	8	-	129	9	384	2965
10. Dharwad	4265	1503	5768	64	891	28	373	-	7124	2425	22	2102	38	96	4683	11807
11. Gulbarga	4563	3743	8306	39	38	19	72	1	8475	2947	146	301	8	15	3417	11892
12. Hassan	2082	465	2547	31	114	28	118	-	2838	654	25	26	388	8	1101	3939
13. Kodagu	478	8	486	N	165	64	6	15	736	12	-	N	763	-	775	1511
14. Kolar	1934	358	2292	30	75	204	74	8	2683	1002	1	N	463	48	1514	4197
15. Mandya	1806	540	2346	309	24	16	15	-	2710	307	26	N	104	26	463	3173
16. Mysore	2929	1153	4082	123	92	19	34	-	4350	922	39	284	708	11	1964	6314
17. Raichur	5346	1164	6510	12	23	4	38	-	6587	2907	70	808	12	16	3813	10400
18. Shimoga	2475	200	2675	175	217	29	20	6	3122	400	3	270	25	1	699	3821
19. Tumkur	2794	672	3466	25	98	53	15	2	3659	2189	48	4	131	160	2532	6191
20. Uttara Kannada	844	64	908	21	90	25	7	14	1065	123	N	109	4	14	250	1315

AGRICULTURE

Source: Statistical abstract of Karnataka 1988-89, DES No 89/1991

Table No.4.13: Area and Production of Principal Agricultural Crops in Karnataka (1955-56 to 1992-93) Cereals

	Rice		Jowar		Bajra		Maize		Ragi		Wheat		Minor Millets		Total Cereals	
	Area in Lakh ha	Prod.in Lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in Lakh tons	Area in Lakh ha	Prod.in lakh tons
1955-56	8.78	11.84	26.67	9.50	5.67	1.57	0.12	0.06	9.31	9.03	3.08	0.69	5.25	1.55	58.89	34.24
1960-61	10.28	13.28	29.69	11.54	5.00	1.29	0.11	0.12	9.96	7.54	3.24	0.77	4.44	1.24	62.73	35.78
1965-66	11.49	12.40	28.77	13.10	4.99	1.22	0.18	0.10	12.60	3.34	2.49	0.47	4.46	1.24	65.05	31.92
1970-71	11.70	20.00	22.24	15.65	5.62	2.11	0.63	2.17	10.65	8.92	3.43	1.30	5.43	2.20	59.71	52.35
1975-76	11.71	21.64	19.45	15.70	7.06	2.82	1.27	3.78	10.78	13.48	4.04	2.78	5.29	2.86	59.59	63.05
1980-81	11.14	22.58	19.91	15.06	5.64	1.92	1.57	3.81	10.57	10.64	3.22	1.74	3.68	1.39	55.73	57.14
1985-86	10.96	20.28	23.18	13.56	4.47	2.08	1.67	3.98	11.09	11.28	2.49	1.05	2.55	00.77	56.41	53.00
1986-87	11.66	22.74	26.40	19.14	4.85	2.50	2.27	5.76	11.75	14.61	2.71	1.36	2.41	1.00	62.05	67.51
1987-88	10.47	18.77	24.65	15.94	4.70	2.52	2.05	5.10	11.16	11.47	2.67	1.25	2.55	1.07	58.25	56.12
1988-89	12.38	25.23	21.06	15.46	4.64	2.08	2.55	6.77	11.50	10.87	2.38	1.35	2.17	0.95	56.68	62.71
1989-90	11.83	23.73	23.39	16.11	5.14	2.81	2.53	7.09	11.67	13.31	2.48	1.25	2.05	0.82	59.09	65.12
1990-91	11.73	24.28	21.55	12.82	4.25	2.03	2.50	6.30	10.55	9.76	1.98	1.23	1.59	0.63	54.15	57.05
1991-92	12.84	27.83	21.08	16.18	4.29	2.48	2.83	8.54	11.13	14.96	1.99	1.39	1.29	0.62	55.45	72.00
1992-93	12.88	29.36	23.05	20.10	3.73	2.35	3.17	10.08	10.37	16.18	2.24	1.53	1.14	0.68	56.58	80.28

Source: Agricultural Production, 1993-94 Karnataka State Department of Agricultural, Bangalore. Brochure on fully revised estimates of area, production and yield of principal crops in Karnataka, DES No.128 of 1991

Table No.4.14

Area and production of Principal Agricultural Crops in Karnataka (1955-56 to 1990-91) Pulses

	<i>Tur</i>		<i>Bengal Gram</i>		<i>Other Kharif Pulses</i>		<i>Other Rabi/summer Pulses</i>		<i>Total Pulses</i>		<i>Total Foodgrains</i>	
	<i>Area in Lakh ha</i>	<i>Prod.in Lakh tons</i>	<i>Area in Lakh ha</i>	<i>Prod.in lakh tons</i>	<i>Area in Lakh ha</i>	<i>Prod.in lakh tons</i>	<i>Area in Lakh ha</i>	<i>Prod.in Lakh tons</i>	<i>Area in Lakh ha</i>	<i>Prod.in lakh tons</i>	<i>Area in Lakh ha</i>	<i>Prod. in lakh tons</i>
1955-56	3.00	1.00	1.66	0.52	7.59	1.90	1.49	0.38	13.72	3.80	72.61	38.04
1960-61	2.96	0.92	1.58	0.55	7.83	1.90	0.69	0.15	13.06	3.52	75.79	39.30
1965-66	3.07	0.95	1.54	0.53	7.80	1.93	0.79	0.11	13.19	3.52	78.24	35.45
1970-71	3.04	1.53	1.63	0.76	8.67	2.50	1.11	0.32	14.45	5.11	74.16	57.46
1975-76	3.21	2.36	1.79	0.80	8.84	4.01	1.55	0.22	15.40	7.39	74.99	70.44
1980-81	3.36	1.25	1.40	0.63	8.62	2.43	1.93	0.57	15.31	4.88	71.04	62.02
1985-86	4.20	1.79	1.91	0.61	7.58	1.94	2.15	0.55	15.84	4.89	72.25	57.89
1986-87	4.45	1.99	2.30	0.89	7.65	2.17	2.17	0.82	16.57	5.87	78.62	73.38
1987-88	4.63	2.09	2.43	1.02	7.92	2.63	2.76	0.94	17.74	6.68	75.99	62.80
1988-89	4.97	1.43	1.88	0.62	7.63	2.14	1.78	0.43	16.26	4.62	72.94	67.33
1989-90	4.82	1.82	2.24	0.75	7.43	2.36	1.98	0.53	16.47	5.46	75.56	70.58
1990-91	4.63	1.75	2.29	0.69	7.54	2.53	1.75	0.43	16.21	5.39	70.36	62.44

Source: Brochure on fully revised estimates of area, production and yield of principal crops in Karnataka, DESNo.128 of 1991

Table No.4.15 Area and production of Principal Agricultural Crops in Karnataka (1955-56 to 1992-93) Oil Seeds

	Groundnut		Sesamum		Rape and Mustard		Niger Seed sun flower		Castor		Linseed		Sunflower		Soyabean		Total		Oilseeds	
	Area in Lakh ha	Prod.in Lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in Lakh tons	Area in Lakh ha	Prod.in lakh tons	Area in Lakh ha	Prod.in Lakh tons	Area in Lakh tons	Prod.in Lakh tons
1955-56	8.38	6.18	0.85	0.17	0.08	0.02	0.02	0.05	1.47	0.35	0.45	0.08	0.47	0.07					11.92	6.93
1960-61	9.15	4.48	0.64	0.11	0.09	0.02	0.25	0.04	1.44	0.25	0.42	0.10	0.48	0.10					12.47	5.10
1965-66	9.03	4.35	0.64	0.14	0.08	0.02	0.22	0.03	1.25	0.19	0.30	0.05	0.38	0.05					11.91	4.79
1970-71	10.27	7.80	0.87	0.27	0.04	0.01	0.21	0.06	1.59	0.27	0.38	0.18	0.63	0.15					13.98	8.75
1975-76	10.24	6.57	1.14	0.48	0.03	0.01	0.56	0.10	1.85	0.223	0.34	0.21	0.84	0.24					14.98	7.84
1980-81	7.90	4.75	1.18	0.40	0.03	0.01	0.55	0.10	1.58	0.81	0.26	0.14	0.63	0.13	0.38	0.16			12.51	6.50
1985-86	10.12	6.79	1.24	0.33	neg	neg	0.55	0.10	2.42	0.80	0.29	0.20	0.41	0.04	3.76	1.55			18.79	9.81
1986-87	10.34	7.26	1.28	0.35	0.04	0.01	0.51	0.09	2.68	1.56	0.29	0.26	0.45	0.11	5.98	2.86	0.13	0.04	21.70	12.54
1987-88	10.56	9.02	1.63	0.77	0.04	0.01	0.52	0.09	3.04	1.16	0.28	0.22	0.44	0.11	10.57	3.51	0.14	0.05	27.22	14.94
1988-89	12.81	9.79	2.00	0.78	0.05	0.01	0.54	0.10	1.95	1.04	0.28	0.24	0.41	0.06	4.91	1.58	0.10	0.10	23.05	13.70
1989-90	11.94	9.33	1.53	0.49	0.04	0.01	0.55	0.11	1.98	1.18	0.27	0.24	0.39	0.10	5.81	2.35	0.14	0.05	22.65	13.86
1990-91	12.12	8.16	1.43	0.40	0.05	0.01	0.53	0.09	1.68	0.59	0.22	0.15	0.28	0.06	8.96	3.82	0.24	0.09	25.51	13.39
1991-92	13.70	11.49	1.66	0.61	0.08	0.02	0.55	0.10	1.40	0.67	0.32	0.31	0.24	0.06	12.08	5.64	0.22	0.15	30.25	19.05
1992-93	12.61	11.36	1.24	0.52	0.05	0.01	0.51	0.09	1.47	0.85	0.24	0.20	0.30	0.07	10.74	4.43	0.65	0.43	27.81	17.96

Source: Agricultural Production, 1993-94, Karnataka State Department of Agriculture, Bangalore Brochure on fully revised estimates of area, production and yield of principal crops in Karnataka, DES No.128 of 1991

Table No.4.16
Area and Production of Principal Agricultural Crops in Karnataka (1955-56 - 1990-91) Annual crops

	<i>Sugar cane</i>		<i>Tobacco</i>		<i>Cotton</i>		<i>Mesta</i>		<i>Sunhemp</i>	
	<i>Area in Lakh ha</i>	<i>Prod.in Lakh tons</i>	<i>Area in Lakh ha</i>	<i>Prod.in lakh tons</i>	<i>Area in Lakh ha</i>	<i>Prod.in lakh tons</i>	<i>Area in Lakh ha</i>	<i>Prod.in lakh tons</i>	<i>Area in Lakh ha</i>	<i>Prod.in lakh tons</i>
1955-56	0.50	31.11	0.42	0.17	11.52	3.01	0.31	0.69	0.08	0.04
1960-61	0.72	51.84	0.39	0.23	9.84	3.82	0.24	0.56	0.05	0.01
1965-66	0.89	69.59	0.38	0.13	10.05	2.33	0.27	0.52	0.06	0.01
1970-71	1.04	81.00	0.38	0.18	11.42	5.70	0.20	0.41	neg	neg
1975-76	1.37	103.80	0.35	0.21	10.35	5.05	0.36	0.51	0.04	0.01
1980-81	1.54	121.27	0.52	0.34	10.12	5.97	0.28	0.49	0.03	0.01
1985-86	1.71	141.11	0.47	0.33	6.74	5.08	0.24	0.42	0.02	neg
1986-87	1.81	143.73	0.47	0.37	4.14	4.50	0.23	0.40	0.01	neg
1987-88	2.03	178.75	0.44	0.34	4.76	5.54	0.25	0.42	0.01	neg
1988-89	2.39	186.82	0.51	0.41	6.54	9.19	0.26	0.44	0.01	neg
1989-90	2.65	210.88	0.50	0.35	6.97	8.87	0.20	0.34	0.01	neg
1990-91	2.72	207.50	0.46	0.33	5.96	6.40	0.15	0.25	0.01	neg

Source: Brochure on fully revised estimates of area, production and yield of principal crops in Karnataka, DES No.128 of 1991

Table No.4.17

District-wise area and production of principal agricultural crops in Karnataka -1989-90

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Sl. No.	Districts	Paddy		Ragi		Jowar		Bajra		Wheat		Other cereals	
		A	P	A	P	A	P	A	P	A	P	A	P
1.	Bangalore	73	154	562	524	-	-	-	-	N	N	14	30
2.	Bangalore Rural	141	205	1,449	1,613	-	-	-	-	N	N	9	13
3.	Belgaum	614	798	42	27	2,450	1,727	591	93	369	200	790	1,803
4.	Bellary	424	1,219	272	123	1,827	2,043	176	121	17	11	585	780
5.	Bidar	197	177	-	-	1,119	887	128	41	105	62	38	8
6.	Bijapur	19	20	-	-	4,655	2,166	1,373	756	464	237	537	1,258
7.	Chikmagalur	447	986	608	499	189	111	-	-	1	1	5	7
8.	Chitradurga	586	1,601	1,091	1,079	891	797	140	32	7	4	454	675
9.	Dakshina Kannada	1,524	2,814	-	-	-	-	-	-	-	-	-	-
10.	Dharwad	823	698	118	92	2,307	1,303	20	7	553	205	556	955
11.	Gulbarga	185	275	1	1	3,625	1,450	803	432	304	166	246	84
12.	Hassan	481	1,004	1292	1104	86	44	-	-	-	-	39	62
13.	Kodagu	453	971	13	12	-	-	-	-	-	-	11	25
14.	Kolar	311	556	1176	1945	64	31	6	3	1	n	127	249
15.	Mandya	679	1,924	762	548	47	25	N	N	-	-	2	1
16.	Mysore	775	2,385	945	635	737	482	21	13	N	N	145	345
17.	Raichur	1,100	2,750	1	-	3,188	1,898	972	543	159	16	278	213
18.	Shimoga	1,753	3,690	351	359	221	294	N	N	1	1	151	251
19.	Tumkur	231	400	1,836	18.36	149	98	15	5	N	N	47	58
20.	Utara Kannada	846	1546	3	2	3	2	-	-	N	N	1	2
State Total		11,662	24,175	10,521	10,399	21,558	13,358	4,245	2,046	1,981	903	4,035	6,819

Source: Karnataka at a Glance, 1990-91, A-Area in '00 ha, P-production in '00 tonnes

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Sl. No.	Districts	Gram		Tur		Other Pulses		Groundnut 000 tonnes		Sugarcane 000 tonnes		Cotton lint 00 bales		High-yielding varieties A
		A	P	A	P	A	P	A	P	A	P	A	P	
1.	Bangalore	N	N	9	7	113	42	12	14	N	3	-	-	589
2.	Bangalore Rural	7	1	51	21	184	91	181	161	20	213	N	N	1,348
3.	Belgaum	199	59	131	28	508	204	1,000	818	1,045	6256	827	1271	1,864
4.	Bellary	86	27	163	53	203	198	731	572	48	378	1023	1382	2,327
5.	Bidar	415	165	417	211	763	225	118	44	262	2,168	38	49	478
6.	Bijapur	370	106	338	189	731	159	1,228	925	328	2,085	255	135	2,076
7.	Chikmagalur	30	10	6	2	248	89	75	79	16	146	27	46	1,008
8.	Chitradurga	28	5	122	60	384	251	1,417	756	55	490	362	465	2,273
9.	Dakshina Karmada	-	-	-	-	108	36	28	35	18	134	-	-	926
10.	Dharwad	345	96	165	29	759	342	1,344	697	41	315	1714	1494	1,778
11.	Gulbarga	572	159	2,509	915	837	220	1,210	725	46	431	57	51	3,911
12.	Hassan	19	5	35	16	467	169	30	15	28	213	43	62	1,603
13.	Kodagu	-	-	-	-	N	N	N	N	N	N	N	N	286
14.	Kolar	3	1	74	48	182	85	968	839	34	302	1	1	1,297
15.	Mandya	4	1	18	5	461	162	102	57	288	3,148	N	N	1,402
16.	Mysore	22	6	69	26	818	240	225	85	96	911	365	481	1,818
17.	Raichur	167	32	409	94	559	341	1,285	1,156	6	51	742	443	2,985
18.	Shimoga	4	1	16	59	86	40	183	250	193	1,872	408	578	1,898
19.	Turnkur	19	4	90	40	468	118	1,768	925	23	168	4	3	1,618
20.	Uttara Karmada	2	N	2	1	37	6	57	67	21	158	92	80	498
State Total		2,292	678	4,624	1,804	7,916	3,018	11,861	8,220	2,568	19,442	5,958	6,541	31,983

Source: Karnataka at a Glance, 1990-91 ; A-Area in '00ha, P-production in '00 tonnes.

Table No.4.18
Distribution of Fertilisers and Mixtures

(in hundred tonnes)

<i>Fertilisers/Nutrients</i>	<i>1980-81</i>	<i>1984-85</i>	<i>1985-86</i>	<i>1986-87</i>	<i>1987-88</i>	<i>1988-89</i>
Fertilisers & Mixtures						
1. Ammonium Sulphate	317	391	465	395	426	558
2. Urea	2,698	4198	3,989	3,843	3,746	6,001
3. Calcium Ammonium Nitrate	405	213	214	320	354	395
4. D.A.P	340	1,551	1,594	1,456	1,562	2536
5. Super phosphate	570	695	736	667	543	572
6. Muriate of Potash	494	952	830	838	903	1,168
7. Sulphate of Potash	35	39	37	46	47	43
8. Rock Phosphate	40	138	158	233	289	421
9. Ammonium Chloride	-	18	42	25	20	27
10. 20:20:0	250	841	872	1074	1152	1397
11. 16:20:0	422	654	502	456	272	466
12. 28:28:0	32	16	5	-	N	24
13. 19:19:19	80	407	511	578	459	538
14. 17:17:17	1,121	1,446	1,057	1,269	1,087	1,421
15. 15:15:15	404	647	592	689	688	940
16. 10:26:26	169	267	208	237	558	350
17. 12:32:16	40	70	38	31	81	64
18. 14:28:14	196	133	96	82	36	16
Total	7,613	12,676	11,946	12,236	12,223	16,937
N	1931	3,110	2,956	3,015	2,864	4,380
P ₂ O ₅	809	1,693	1644	1,612	1,619	2,302
K ₂ O	298	1,104	955	1,031	1,101	1,316
N+P+K	3438	5,907	5,555	5,658	5,584	7,998

Table No: 4.19

Agricultural Implements and Machinery 1961 to 1983

(hundreds)

Livestock Census Year/Districts	Ploughs			Sugarcane Crushers		Oil Engines with pump sets for irrigation	Persian wheels or Rahats	Tractors including power tillers	Ghanies	Others	Total
	Wooden	Iron	Carts	Operated by power	Worked Bullocks						
1	2	3	4	5	6	7	8	9	10	11	12
1961	22,671	2,284	2,938	28	131	101	252	10	38	-	32453
1966	22,454	3,077	6,885	63	157	246	148	124	29	-	33183
1972	20,391	4,675	6,750	86	98	430	342	76	13	22748	55609
1977	22,784	5,816	6,773	99	103	894	223	140	15	26035	62882
1983(P)	25,958	8,010	8,382	49	119	703	140	303	15	68744	112423
1. Bangalore											
2. Bangalore Rural	1,568	816	356	5	6	30	12	13	N	5399	8205
3. Belgaum	1,157	590	928	11	14	139	17	51	2	5898	8807
4. Bellary	736	170	396	1	6	5	6	12	N	3771	5103
5. Bidar	267	153	127	N	8	8	1	3	N	1024	1591
6. Bijapur	866	540	704	5	6	72	4	16	1	3753	5967
7. Chikmagalore	4,076	345	456	N	7	15	4	35	1	2807	7746
8. Chitradurga	1,086	342	389	5	3	34	1	18	N	4126	6004
9. Dakshina Kannada	1,894	319	26	N	2	203	N	6	N	1712	4162
10. Dharwad	1,466	195	873	1	4	11	15	53	3	7714	10335

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Livestock Census Year/Districts	Ploughs		Carts	Sugarcane Crushers		Oil Engines with pump sets for irrigation	Persian wheels or Rahats	Tractors including power tillers	Ghanies	Others	Total
	Wooden	Iron		Operated by power	Worked Bullocks						
1	2	3	4	5	6	7	8	9	10	11	12
11. Gulbarga	746	359	546	1	3	48	4	7	1	4222	5937
12. Hassan	1865	235	364	1	5	10	2	7	N	3359	5848
13. Kodagu	290	322	13	-	-	7	N	8	N	225	865
14. Kolar	1380	883	552	1	9	27	45	14	N	3823	6734
15. Mandya	1238	869	396	9	5	16	5	8	3	2554	5103
16. Mysore	2294	453	558	1	6	6	5	4	2	3342	6671
17. Raichur	1087	169	463	N	4	8	3	18	N	3877	5629
18. Shimoga	1162	651	448	4	12	17	6	17	N	4356	6673
19. Tumkur	2023	367	672	4	10	30	7	11	2	5791	8917
20. Uitara Kannada	757	232	115	N	9	17	3	2	N	991	2126

Note: * Excluding Electrical Pumpsets for irrigation purpose. quinquennial Livestock Census Reports.

As per 1990 livestock census, there were 95,644 seed-cum-fertilizer drills, 1,28,002 seed drills, 5,46,753 chaff cutters, 65,789 wheel hoes, 1,68,086 sprayers and dusters and 26,824 rice planters among hand operated implements; 25,11,115 wooden ploughs, 7,41,986 soil stirring steel ploughs, 5,98,023 soil turning steel ploughs, 6,85,296 cultivators, 7,16,670 discharrows, 1,57,586 seed cum fertilizer drills, 5,74,634 seed drills, 2,95,003 levellers, 76,504 wet land puddlers, 1,85,240 olpad threshers, 8,55,101 animal carts 16,446 sugarcane crushers, 46,856 power operated sprayers and dusters, 1,06,707 diesel engine pumpsets, 4,03,789 electric engine pumpsets, 15,139 agricultural power tillers, 33,622 agricultural tractors, 26,730 mould board ploughs, 9,977 disc harrows, 3,190 seed cum fertiliser drills, 4,455 planters, 13,631 levellers, 9,845 potato diggers, 19,522 trailers, 2,314 sugarcane crushers, 401 paddy threshers, 273 wheat threshers, 1,448 multi-crop threshers and 768 maize shellers among power operated agricultural implements.

A comparative picture of Karnataka among the major States in India in agricultural production is as follows:

<i>Sl.No.</i>	<i>Particulars</i>	<i>Year</i>	<i>State Total</i>	<i>Rank</i>
1.	Total reporting area (lakh ha)	1985-86	190.5	6
2.	Average size of agricultural holdings	"	2.41	8
3.	Net sown area (as percent of reporting area)	"	53.4	7
4.	Per capita rural income (Rupees)	1987-88	1430	6
5.	Income generated in agriculture per ha. of gross cropped area (Rs.)	1984-85	2728	16
6.	Production of food grains (in thousand tonnes)			
	i. Rice	1988-89	2411	9
	ii. Jowar	"	1511	3
	iii. Maize	"	678	5
	iv. Redgram	"	199	5
	v. Bengal gram	"	986	9
7.	Ground nut	"	1010	4
8.	Cotton (lint)	"	10	4
9.	Sugarcane	"	18446	4
10.	Tobacco	"	40	3
11.	Fertilizer consumption per ha of gross cropped area (Kg)	"	71.8	8
12.	Pesticides consumption per ha of gross cropped area (gm)	"	404	7
13.	Per capita milk production in Kg.	"	56.2	10

Add to Part I, page 606 after para II:

Manures and Fertilizers

The use of fertilizers has gained momentum in recent decades due to vigorous extension efforts and increased irrigation potential in the State. Consumption of fertilizers which was 28,000 tonnes during 1956-57 has increased to eight lakh tonnes by 1988-89. The arrangement for the supply, distribution and quality control of chemical fertilizers in the State is the major task of the Department of Agriculture. The responsibility of distribution of fertilizers is shouldered by the organisations like Marketing Federation, Agro Industries and the Private input firms and the dealers from time to time. The number of sale-points which were 6,627 as on 31.5.1982 in different parts of the State increased to 9,176 as on 30.9.1985 in order to ensure the supply in the villages. During 1990, there were 10,651 sale-points comprising of 3,504 under Co-operatives, 491 under Agro-Industries and 6,656 under Private sector.

There are two fertilizer production units in Karnataka viz Gamon Fertilizers and Chemicals (Belgola) and Mangalore Chemicals and Fertilizers. Also there is one granulated mixing unit at Khadaklat in Belgaum district. These units produce only the fertilizers containing Nitrogen and Phosphorous. There is no production of potash fertilizer in Karnataka well as in India. The fertilizer production in Karnataka during 1983-84 was about 1.56 lakh tonnes of Nitrogen and 0.15 lakh tonnes of Phosphorous. In Karnataka, there were 91 (Central 14 + State 77) Warehouses with storage capacity of 3.76 lakh tonnes (1.32+2.44). The storage accommodation with Food Corporation of India was 2.93 lakh tonnes. There were 2,368 rural godowns and 696 marketing godowns with their capacity at 4.91 lakh tonnes as on 30.6.83. (See chapter VI for details)

National project on development of fertilizer use in low rainfed areas (NPDF) has been under implementation from 1988-89 in five districts viz., Tumkur, Gulbarga, Bijapur, Dharwad and Kolar. The main components of the scheme are opening of retail outlets in interior places, organisation of farmers training programmes and block demonstrations.

The consumption of Phosphorus is more than the consumption of Potash while the consumption of Nitrogen is more than two-fold of Phosphorous in Karnataka. As per commodity act, there are 26 types of chemical fertilizers of which 13 are straight and 13 complex fertilizers.

Add to Part I, page 607; after 1st para:

Quality Control Labs

The analysing capacity of two fertilizer laboratories is about 4,800 samples per annum. The fertilizer control order 1985 had been enforced effectively in the State to prevent the supply of spurious fertilizers to the farmers. Assistant Director of Agriculture at the taluk, Principal Agricultural Officer at the district and Assistant Director of Agriculture (Inputs) attached to the Principal Agricultural Officer have been appointed as Fertilizer Inspectors to enforce the various provisions of the fertilizer control order 1985. They visit the sale points regularly, draw samples and send them to fertiliser quality control laboratories situated at Bangalore and Dharwad to know the quality of fertilizers offered for sale. Action as per fertilizer control order had been taken against dealers and manufacturers of non-standard fertilizers. Action include fixation of reduced prices as per nutrient content, suspension or cancellation of registration certificates, issuance of warning letters, etc. The number of samples drawn and analysed from 1988-89 to 1991-92 are as follows:

<i>Year</i>	<i>No. of samples drawn</i>	<i>No. of sub-standard samples</i>
1988-89	3944	273
1989-90	3640	259
1990-91	3699	218
1991-92	3076	177

Seed and Seed farms

Add to Part I, page 609, after IIInd para :

Out of the 62 seed farms in the Department of Agriculture, one farm had been closed and 30 farms had been transferred to different agencies as indicated here. (1) National Seeds Corporation - one, (2) Karnataka Oilseeds Growers Federation-one, (3) Karnataka State Seeds Corporation - six, (4) University of Agricultural Sciences, Bangalore/Dharwad-eight and Zilla Parishads-14. During 1991-92, the department was having 31 seed farms for production of foundation seeds. The department is also monitoring the production of foundation seeds in case of 14 seed farms transferred to Zilla Parishads. The foundation seed produced on the departmental farms like seed farms, agricultural school farms, agricultural development centre farms and rural development training centre farms were handed over to the Karnataka State Seed Corporation for processing and for further multiplication into certified seeds on the registered seed growers' fields. The two Agricultural Universities in the State are primarily responsible for production and supply of breeder seeds; this is being supplemented with Indian Council of Agricultural Research institutions wherever necessary. The State Department of Agriculture, Karnataka State Seed Corporation and Karnataka Co-operative Oilseed Growers' Federation (KOF) share the responsibility of producing foundation seed of agricultural crops in the State besides private institutions. The role of private seed industry in the State has been well recognised and they have been provided with all the facilities on equal terms with that of institutional agencies. All efforts are being made and special thrust programmes have been launched to organise production and distribution of oilseeds and pulses, besides paddy under special foodgrains production programme (SFPP). The quantity of certified quality seeds distributed to the farmers was 2.35 lakh quintals in 1982-83, 2.85 lakh quintals in 1984-85, 3.30 lakh quintals in 1987-88, 3.47 lakh quintals in 1990-91, 4.26 lakh quintals in 1991-92 and 4.16 lakh quintals during 1992-93. The activities undertaken regarding development of seed farms include purchase of bullocks, purchase of agricultural implements, purchase of pumpsets, repairs, electrification, land levelling and development, removal of weeds, digging of irrigation wells, sinking of borewells, etc.

Seed Testing Laboratories

Add to page 612 (before Soil Testing):

There are two seed testing laboratories functioning under the Department of Agriculture and are situated at Hebbal (Bangalore dt) and Dharwad respectively. The seed testing laboratory, Lalbagh, Bangalore is under the control of Horticultural department. These three laboratories undertake testing of seeds for certification and service seed samples to confirm to the minimum standard of purity and germination. The number of seed samples analysed in both the laboratories was 30,251 during 1986-87, 32,980 in 1987-88, 31,657 in 1988-

89, 30,365 in 1989-90, and 32,340 in 1990-91.

There are 680 seed inspectors under the Department of Agriculture to monitor and supply quality seeds to the farming community by enforcing the seed act of 1966. During 1986-87, 29,225 seed samples were drawn and after analysis 1,394 seed samples were found to be sub-standard. Likewise the number of seed samples drawn and no. of sub-standard samples respectively for the years 1987-88 were 30,404 and 905, 32,260 and 6,184 during 1988-89 and 26,843 and 4,456 during 1989-90.

Add to Part I, page 615, after IInd para:

Table No.4.20

Consumption of Pesticides

<i>Sl.No.</i>	<i>Year</i>	<i>Area covered under plant protection measures in lakh hectares</i>	<i>Consumption of pesticides (Tech. Grade Material) (Quantity in metric tonnes)</i>
1.	1981-82	38.68	3,190
2.	1982-83	45.82	3,224
3.	1983-84	48.35	3,600
4.	1984-85	45.35	4,112
5.	1985-86	40.76	3,277
6.	1986-87	44.88	3,263
7.	1987-88	59.92	4,486
8.	1988-89	59.92	4,486
9.	1989-90	65.55	4,379
10.	1990-91	59.38	4,170

Add to Part I, page 616, Before Farmers Training:

University of Agricultural Sciences, Dharwad

The University of Agricultural Sciences (UAS), Dharwad, was established on 1st October 1986 by bifurcating the U.A.S., Bangalore. The University was founded around the nucleus of the college of Agriculture founded in 1947, and later attached to UAS, Bangalore established in 1965. The university has jurisdiction over eight districts viz. Belgaum, Bellary, Bidar, Bijapur, Dharwad, Gulbarga, Raichur, and Uttara Kannada. About 52 percent of the gross cropped area of the State are covered under UAS., Dharwad. The teaching institutions of this university include three colleges of Agriculture (Dharwad, Bijapur and Raichur), a veterinary college (Bidar), a college of Agricultural Engineering (Raichur) and a Rural Home Science College (Dharwad) besides degree programmes in Agricultural Marketing and Co-operation and Forestry.

The research activities of the university are spread over the 32 Agricultural Research Stations, while for extension activities, the university has two Krishi Vignyan Kendras, three extension education units, three National Agricultural Extension projects and one National Demonstration scheme. Six seed farms viz, Hanumanamatti, Annigeri, Bijapur, Bailhongal, Kallolli and Mundgod, were transferred from the State Department of Agriculture to the university. One cattle breeding farm has been transferred from the Department of Animal Husbandry to take up Deoni Cattle Improvement Programme.

The area covered by the university falls under six agro-climatic zones in which a wide variety of crops ranging from cereals to plantation crops are grown. About 1.5 million ha. of land is irrigated by four major irrigation projects of the Malaprabha, the Ghataprabha the Tungabhadra and the Upper Krishna. To fulfill the need of research, the university has one main research station at Dharwad, two regional research stations at Raichur and Bijapur and 29 Agricultural Research Stations. The research at these research stations is oriented on the location specific problems of different agro-climatic regions, formulated after a thorough discussion in the Regional Research Advisory Council and Regional Research Formulation Committees of the respective regions. The research is concentrated on plant sciences, animal sciences, home science and fisheries.

The total area available for conducting research at these research stations is 1,487 ha, of which 310 ha are under irrigation. The University's research work is also strengthened by 28 All-India Co-ordinated Research Projects (AICRP) on various crops and disciplines besides a seed project funded by ICAR. Under the National Agricultural Research Programme (NARP) research capabilities have been considerably enhanced to tackle the location specific problems. The NARP phase II funded by ICAR has also helped in improving infrastructure for research. In addition to these 36 *ad hoc* schemes funded by ICAR, UGC, Bhabha Atomic Research Centre, CADA, World Neighbours, USAID and Department of Environment are taken up at the different campuses of the university.

The Directorate of Extension with extension education units (Dharwad, Raichur and Bijapur), Krishi Vignana Kendras at Hanumanmatti and Bidar, extension co-ordinators and teaching/research staff provide transfer of technology services to farmers in the form of demonstrations, trainings, radio talks, popular literature, Krishi Melas, field days, minikit trials and package of practices. The particulars of research stations and the lead crop or aspect dealt in research stations of UAS, Dharwad are given in the following list.

Particulars of the Research Stations, UAS, Dharwad.

<i>Sl.No</i>	<i>Name of the Research Station</i>	<i>Lead crop/aspect dealt in research station.</i>
1.	ARS, Annigeri, Dharwad Dist.	Ragi, Jowar, Wheat, Safflower, Pulses and dry farming aspects
2.	ARS, Ankola, Uttara Kannada Dist.	Fisheries and Horticultural crops.
3.	ARS, Arabhavi, Belgaum Dist.	Maize, sugarcane, cotton, wheat and soyabean.
4.	ARS, Bagalkot, Belgaum Dist.	Ragi, Jowar, Wheat and dry farming aspects.
5.	ARS, Bailhongal, Belgaum Dist.	Soyabean, groundnut, pulses and kharif sorghum.
6.	Water Management Research Centre, Belvatgi, Dharwad Dt.	Water management aspects and safflower.
7.	ARS, UKP, Bheemarayangudi, Gulbarga Dist.	Maize and water management aspects.
8.	ARS, Bidar	Sugarcane
9.	Regional Research Station, Bijapur	Ragi, Jowar, wheat, groundnut, safflower, sunflower, bajra, pulses, forage crops, fruit crops, dry farming aspects, farm forestry and farm implements aspects.
10.	ARS, Deoni, Bidar Dist.	Animal breeding and nutritional management.
11.	Main Research Station, Dharwad	Kharif jowar, wheat, groundnut, maize, sunflower, soyabean, forage crops, pulses, fruit crops, animal breeding, biogas technology, use of wind energy and rabi sorghum
12.	ARS, Gadag, Dharwad Dist.	Cotton and sunflower,
13.	ARS, Gangavati, Raichur Dist.	Paddy, oilpalm and saline water management.
14.	ARS, Gulbarga	Ragi, jowar, bajra and pulses
15.	ARS, Hagari, Bellary Dist.	dryland farming techniques of sorghum, sericulture, bajra and farm forestry.
16.	ARS, Hanumanamatti, Dharwad.	Kharif jowar, sunflower and horticultural crops.
17.	ARS, Dharwad (Hebballi farm)	Cotton and chilli
18.	ARS, Kallolli, Belgaum Dist.	Animal management.
19.	ARS, Kanabargi, Belgaum Dist.	Vegetable crops.
20.	ARS, Kawadimatti, Gulbarga Dist.	Water management aspects.
21.	ARS, Mugad, Dharwad Dist.	Paddy and pulses.
22.	ARS, Mundgod, Uttara Kannada Dist.	Paddy, cotton
23.	ARS, Nippani, Belgaum Dist.	Tobacco and maize.
24.	Agro-forestry Division, Prabhunagar, Dharwad Dist.	Farm forestry.
25.	Regional Research Station, Raichur.	Cotton, sunflower, groundnut, fruit crops, vegetable crops, fisheries, farm forestry, aspects, sericulture and farm implements aspects.
26.	ARS, Sankeshwar, Belgaum Dist.	Sugarcane, groundnut and soyabean.
27.	ARS, Sirsi, Uttara Kannada Dist.	Paddy.
28.	ARS, Sirsi.	Pepper and arecanut.
29.	ARS, Siruguppa, Bellary	Research on cropping systems paddy, safflower, cotton, wheat and soyabean.
30.	ARS, Tarehalli, Uttara Kannada Dist.	Plantation crops and spices.
31.	ARS, Janawada, Bidar.	Sugarcane, animal nutrition and sericulture.
32.	ARS, Malanur, Hunasgi, Gulbarga Dist.	Sunflower and water management aspects.

Part I, Page 616, Before Farmer's Training:

University of Agricultural Sciences, Bangalore

The University of Agricultural Sciences, Dharwad was carved out of UAS, Bangalore, during October 1986. UAS Bangalore has now the territorial jurisdiction over Bangalore, Bangalore Rural, Kolar, Tumkur, Chitradurga, Mandya, Mysore, Kodagu, Hassan, Chikmagalur, Shimoga and Dakshina Kannada districts. About 40 percent of the total geographical area and about 37 per cent of the gross cropped area are covered under UAS, Bangalore. The UAS, Bangalore has three colleges of Agriculture (Bangalore, Mandya and Shimoga), a College of Horticulture (Mudigere), A College of Basic Science and Humanities (Bangalore), a College of Fisheries (Mangalore) and a Veterinary College at Bangalore. A forest college at Tithimathi (Kodagu) has also been sanctioned. Research is a key function of the UAS, Bangalore. The University have five Regional Research Stations, 17 Agricultural Research Stations, four extension education units, two Krishi Vignan Kendras (Mudigere and Holenarasipur) and a Farmers Training Centre at Bangalore. In all 33 ICAR co-ordinated Research Projects and 38 research projects founded by other agencies were in operation during 1991-92.

The Research Stations are functioning with the responsibility of tackling the location specific problems encountered in farming situations/crops/cropping systems. Strong linkage between Research and Extension at Zonal and State levels are established by means of monthly workshop, seasonal zonal workshops, state level technical committee meetings, thus providing adequate opportunities for interaction. The research is concentrated on plant sciences, animal sciences and fisheries. The particulars of research stations and the lead crop aspect dealt in research stations of UAS Bangalore are given in the following list.

Particulars of the Research Stations, UAS, Bangalore.

<i>Sl.No.Name of Research Station</i>	<i>Lead crop/aspect dealt in Research station.</i>
1	2
1. ARS, Arasikere, Hassan	Coconut cultural, manurial, irrigation and development of integrated pest management techniques.
2. ARS, Brahmavar, Dakshina Kannada	Plantation crops, horticultural crops, coastal paddy, mixed farming (Fisheries).
3. ARS, Balajigapade.	Potato, horticultural crops under dry land conditions.
4. ARS, Bidarammanagudi, Tiptur Tq	Animal nutrition, animal husbandry, mixed farming technology, agro-forestry and fodder production.
5. ARS, Chintamani Tq	Dry land farming, horticultural crops Post-harvest technology and agro forestry

1	2
6. ARS, G.K.V.K., Bangalore	Dry farming techniques, horticultural crops, pulses, sunflower, sericulture, forestry, post-harvest technology and seed technology.
7. Main Research Station, Hebbal, Bangalore	Research through multidisciplinary approach in agriculture, veterinary, dairy, poultry, weed control and home science.
8. Fisheries Research Station, Hessaraghatta, Bangalore.	Research in Inland fisheries.
9. ARS, Hiriya, Chitradurga.	Sugarcane, paddy, cotton, soils and water management and cropping systems.
10. ARS, Honnaville, Shimoga.	Agronomic Research on major food crops, cropping patterns and water management.
11. ARS, Ponnampet, Kodagu.	Research on hill paddy, piggery.
12. ARS, Kandli	Research on high-yielding varieties of potato, maize, groundnut, sunflower, redgram, cotton, potato seed production.
13. ARS, Kathalagere, Shimoga Dist.	Research on pulses, oilseeds, horticultural crops, seed production and water management.
14. ARS, Madenur, Hassan Dist.	Research on potato, mulberry, forest production, seed production of potato, horticultural crops.
15. ARS, Mandya	To evolve and develop improved varieties of paddy, maize, sugarcane, ragi, groundnut and pulses, water management and inland fisheries.
16. ARS, Kankanady, Dakshina Kannada.	Research on coastal paddy, pulses and marine fishery.
17. ARS, Madikeri, Kodagu Dist.	Research on Paddy.
18. ARS, Mudigere, Chikmagalur Dist.	Research on cardamom, cashewnut, spices, animal management, agro forestry, soil and water conservation, fisheries and sericulture.
19. ARS, Nagamangala, Mandya Dist.	Research on animal sciences, dry land agriculture.
20. ARS, Nagenahalli, Mandya Dist.	Research on paddy, management of diseases in banana and betelvine
21. ARS, Navile, Shimoga Dist.	Research on Tobacco and pulses,
22. ARS, Ullal, Dakshina Kannada.	Research on cashew, tuber crops, pepper and cocoa.

The UAS, Bangalore has four extension education units at Bangalore, Mandya, Mudigere and Mangalore for conducting trials and demonstrations of new agricultural technology at farmers' fields. From 1986 to 1991, 488 adaptive trials, 520 early demonstrations, 114 block demonstrations and 558 whole farm demonstrations were conducted apart from organising 4,033 discussion meetings, 1,456 training programmes and 309 field days. The two Krishi Vignana Kendras are located at Mudigere and Holenarasipura for conducting on farm research, training programmes and demonstrations on new agricultural technology. From 1986 to 1991, 93 on-campus 172 off campus training programmes, 11 field days and eight demonstrations were conducted. National Demonstration Scheme is in operation in Chitradurga and Mysore districts with head quarters at Agricultural Research Station, Nagenahalli, Mandya district.

Add to Part I, Page 617 after IIIrd para:

Agricultural Development Centres

There were four agricultural development centres in the State during 1991-92, situated at Thyavanagi (85.4 ha.) Channagiri taluk, Konnur (38.3 ha) Nargund taluk, Dharwad (74.14 ha) and Dhadesugur (30.5 ha) in Sindhanur taluk. Study of location specific cropping pattern, laying out of farm trials, training the field functionaries and farmers and multiplication of seeds are some of the major activities of the Agricultural Development Centres.

Women and Youth Training Extension Project

The women and youth training extension project (WYTEP) assisted by Danish International Development Agency (DANIDA) is in operation since 1982-83 in 107 taluks of 11 districts. The first phase of the project was completed in June 1989 at a total cost of Rs.4.738 crores. The second phase of the project is in operation from July 1989 with an outlay of Rs.12.848 crores in all districts except Bidar. Five training centres were started at Kotnur (Gulbarga), Kagathi (Kolar), Kampli (Bellary), Arkalgud (Hassan) and Belthangady (Dakshina Kannada). The project component consists of conducting training for farm women (10 days) and farm youth (14 days) in the latest technology of agriculture and allied subjects like animal husbandry, horticulture, sericulture etc. The institutional courses, village based training programmes and link workers training for farm women are conducted under this project. Extension workers help the farm women and farm youth in understanding the technologies through skill demonstrations, field visits etc, and motivate them for adoption and deriving the benefits.

Add to Part I, Page 625 :

Karnataka Co-operative Oilseeds Growers Federation Limited

The Karnataka Co-operative Oilseeds Growers Federation Limited (KOF), the agency entrusted with the implementation of the project *viz.* Restructuring edible oil and oil seeds production and marketing in Karnataka, was registered on 26th October 1984, under the Karnataka Co-operative Societies Act. The project is designed to create an integrated co-operative system of production, procurement and processing of oil seeds and marketing of oil and by-products. Karnataka is one of the seven States in the Country to implement this project. The project covers the districts of Dharwad, Raichur, Bijapur, Gulbarga, Bellary, Chitradurga, Belgaum, Bidar and Tumkur. The first phase of the project has been implemented over a period of five years from 1984 to 1989. During the second phase of the project, the structure has been re-organised to a three-tier co-operative structure with the village level Oil Seeds Growers Co-operative Societies (OGCS) being affiliated to Regional Unions organised at the district level and in turn the Regional Unions will be affiliated to the State Level Federation. The Regional Unions are as follows: Union I (Raichur, Gulbarga and Bidar districts), Union II (Bellary, Chitradurga and Tumkur

Districts) and Union III (Dharwad, Bijapur and Belgaum districts).

The Unions arrange for the supply of inputs to the member growers through OGCS and also organise demonstrations and give technical advice to the growers. Procurement of the farmers produce is done through the Co-operative Societies on payment. Afterwards, the oilseeds are processed in the Union's own marketing plant and the final products are marketed by the Federation. As on 31.12.1991, 281 OGCS have been organised covering 2,199 villages with an oilseed area of 3.16 lakh ha. The number of members was 97,986. To extend support to the societies in the initial stages the unions provide managerial subsidy of Rs.3,000 per OGCS per year for the first two years and an equipment subsidy of Rs.19,500 per society. To undertake the multiplication of breeder seed and conduct adaptive research, an Area Agronomic Centre is established at Karemathehally Village in Dharwad district. A Divisional farm is established at Turukondana village in Raichur district. The federation has set up a training centre to train the field staff, society secretaries, members etc. The project provides for a processing plant at Hospet in Bellary district and an oil packaging plant at Bangalore. The Federation market edible oil under the following brand names: Safal (refined groundnut oil), Trupti (double filtered groundnut oil), Sungold (refined sunflower oil) and Maize Magic (refined maize oil). The authorised share capital of the Federation is Rs.5 crores and the paid up share capital is Rs.179.11 lakhs as on 31.11.1992.

Add to part I page 629, after 4 th para :

Comprehensive Crop Insurance Scheme

Comprehensive crop insurance scheme was introduced in 1981 with the objective to provide a financial support to farmers in the event of crop failure due to drought, flood etc. The scheme is in operation in 174 taluks of the State (except in Yelandur taluk) from 1985 onwards covering crops like ragi, rice, jowar, maize, bajra, wheat, bengalgram, groundnut, sunflower and safflower. The State Government participates as co-insurer with the Government of India sharing premia and claims in the ratio of 1:2 and sharing 50 percent subsidy on the premia paid by small and marginal farmers. The scheme is implemented through the General Insurance Corporation of India, Bombay. The State Crop Insurance Fund has been set up for administering the crop insurance scheme in the State. The State Government contributes grant every year to the Fund and also one third insurance premium collection from the farmers is pooled to this fund. From this fund 50 percent subsidy on the insurance premium of small and marginal farmers will be paid and claims of farmers are settled. The scheme is compulsory for all the loanee farmers. The Department of Agriculture monitors the implementation of the scheme and takes up propaganda and publicity. Since the implementation of the scheme up to the end of December 1991, the amount contributed to the fund was Rs.583.42 lakhs and Rs.542.35 lakhs has been paid towards claims payment and subsidy on premium to small and marginal farmers. At the end of December

1992, Rs.85.84 lakhs is collected as premium for an area of 3.29 lakh ha. by 1.84 lakh farmers for an insured sum of Rs.5,727.52 lakhs and in this 92,196 small and marginal farmers have been covered. The Government of India have recently proposed to launch a pilot scheme to cover all farmers and all crops against all risks (by charging actual rates of premia) in one of the district during 1992-93.

Save Grain Campaign

'Save Grain Campaign' was launched by the Government of India in 1965-66 to minimise the loss of foodgrains at post harvest stages. The thrust is to educate, motivate and persuade the farmers, traders and all those who are involved in the storage of foodgrains to adopt scientific methods. The regional office based in Bangalore caters to the needs of Karnataka. Farmers store grains in masonry structures which are either underground or partly underground and in some instances fully above ground level. The post harvest loss of foodgrains by rodents is estimated at 2.5% of the total production. The loss due to storage insects is estimated as 2.5%. As a precautionary measure against crawling infestation and cross infestation malathion is sprayed before storing the foodgrains both inside and outside the storage structures and also to the entire storage premises. From 1977 to 1992, 60,775 receptacles/storage premises were sprayed. Fumigation is being done by using Ethylene dibromide (EDB) and from 1977 to 1992, 23,284 storage structures (which contained 88,074 quintals) were fumigated. Aluminium phosphide pellets or torpedo baiting with zinc phosphide bait are very effective in saving foodgrains. From 1977 to 1992, 7,20,753 burrows were treated in an area of 60,162 acres. During the said period, 817 pacca kothis and 16 reinforced brick bins/reinforced cement concrete were constructed in the adopted villages in Karnataka.

Input Survey

The third Input Survey was conducted in the State with the Agricultural year 1986-87 as the reference period and as an integral part of the fourth agricultural census 1985-86. The pattern of distribution of number and area of operational holdings in different sizes in the 1986-87 Input Survey was similar to that of the Agricultural census 1985-86. The percentage of net area sown once, twice and more than twice for all size groups was about 92.3%, 76% and 0.1% respectively. Out of the total net area sown about 13.7% of the area was irrigated. Out of the total net irrigated area, about 70.8% was cropped more than twice. Out of the total estimated holdings of about 44 lakhs, 24 thousand holdings forming about 0.55% of the total, were reported to be water logged, covering an area of 0.19% of the total operated area. About 0.14% of the total holdings were affected by salinity covering an extent of 0.03% of the total area. The proportion of operational holdings treated with one or more chemical fertilizers in irrigated areas was

about 81.4% whereas the proportion in unirrigated areas was 49.8% for all size groups. The treatment of farm yard manure was higher both in irrigated and unirrigated areas. The percentage of irrigated area treated with pesticides under cotton and paddy was about 50.8% and 41.4% respectively. About three fourth of the total holdings have reported one or more category of cattle under all size groups. The number of steel ploughs owned and used per 100 operational holdings increased from 33 in 1981-82 to 36 in 1986-87. The number of disc harrows also increased from 23 to 26. The percentage of operational holders who availed credit for agricultural and allied activities worked out to 20.3 under all size group. The percentage of holdings who availed credit went up from 15.4% (1981-82) to 20.3% (1986-87) under all sizes.

Indo-American Hybrid Seeds

Indo American Hybrid Seeds (IAHS), a private agency was established in 1965 in Bangalore for production and export of F1 hybrid flower and vegetable seeds as well as ornamental plants. High-yielding and disease resistant varieties have been developed for domestic and export markets. IAHS has also perfected the art of raising healthy and attractive foliage plants. These are grown under controlled light conditions and are well acclimatized to thrive indoors. Recently a most modern tissue culture laboratory has been established to produce over five million plantlets per year for export. IAHS has built green houses measuring about 556 sqm at Bangalore in 1965. Since then it has built greenhouses measuring about 13,533 sqm, in Bangalore and in Delhi. The Indo-American Exports, a sister concern of IAHS produces hybrid seeds of vegetables and flowers and ornamental plants exclusively for export. A number of outstanding hybrids have been released in tomato, chillies, brinjal, bhendi, melon and cucumber. IAHS has initiated research and development work on oilseeds crops like sunflower, groundnut and castor in 1988.

Associated Agricultural Development Foundation

The Associated Agricultural Development Foundation (AADF), a private body was established during 1977 to carry out research and other scientific studies on various export oriented agricultural produce with a view to increase their yield and quality. AADF's regional centre and extension centres are situated at Chikballapur in Kolar District. The crops selected for research and development are onion and garlic. The onion varieties developed by AADF and recommended for cultivation in Karnataka include Agrifound Dark Red, Agrifound Light Red, Agrifound Red and Agrifound Rose. The garlic varieties are G-1, G-41, G-50 and G-51. The foundation has an advisory committee which is headed by Deputy Director General (Horticulture) ICAR. It is a centre for co-ordinated research on onion and garlic crops under all India Co-ordinated Vegetable Improvement project and All India Co-ordinated Research on post harvest technology of Horticultural crops of ICAR.

HORTICULTURE

Add to Part I, page 637 :

During 1990-91, it was estimated that about 11.5 percent of the total net cultivable area of 107.4 lakh hectares is occupied by the horticultural crops, which constitute an area to 12.34 lakh ha. Horticultural activity has been strengthened in the State to improve the productivity, bringing land not suitable for Agriculture under Horticulture and to improve the economic conditions of the rural population. The department is maintaining 398 Horticultural farms and nurseries spread all over the State covering an area of 8,076 ha. These farms and nurseries are serving as centres for demonstration of improved practices and centres for propagation. The progress achieved under distribution of seedling is given here.

Sl.No.	Item	1989-90	1990-91	1991-92
1.	Fruit crops (lakhs Nos)	41.43	35.75	49.32
2.	Coconut (lakhs Nos)	9.69	10.83	13.71
3.	Spice crops (lakh Nos) (Cardamom and pepper)	10.50	3.00	1.32
4.	Vegetable seeds ('000)	21.21	30.93	35.63
5.	Cashew plants (lakh Nos)	4.48	0.48	0.48
6.	Flower Plants (lakh Nos)	-	1.53	1.61

Source: Directorate of Horticulture.

District-wise area and production of Horticultural crops in the State for the year 1990-91 is provided in table nos 4.21 to 4.24 and area under Horticultural crops in Karnataka from 1986-87 to 1990-91 is given in table no.4.25.

Add to Part I, Page 645-46 :

Table No.4.21

Area Under Fruit Crops in Karnataka for the year 1990-91.

Sl. No.	District	Mango	Banana	Citrus	Guava	Sapota	Grapes	Pine-apple	Pomegranate
1	2	3	4	5	6	7	8	9	10
1.	Bangalore	838	528	299	927	663	930	1	82
2.	Bangalore (Rural)	8932	2542	292	961	667	1223	2	150
3.	Chitradurga	2510	1385	316	379	688	68	-	212
4.	Kolar	24298	145	279	1785	1307	1689	-	199
5.	Shimoga	2680	5474	808	607	895	-	1443	74
6.	Tumkur	6154	2180	163	334	365	29	-	149
7.	Belgaum	2480	1852	1026	654	1368	279	35	236
8.	Bijapur	1146	2396	3055	382	556	1253	-	1318
9.	Dharwad	3226	638	338	1000	1082	24	-	145
10.	Uttara Kannada	2476	1068	291	278	893	-	515	31
11.	Bellary	1238	1694	130	258	451	33	-	95
12.	Bidar	3511	174	316	508	219	192	4	207
13.	Gulbarga	1364	2484	957	209	123	80	-	265
14.	Raichur	2090	905	1158	633	464	113	-	292
15.	Chikmagalur	2630	3946	3238	528	927	13	164	242
16.	Dakshina Kannada	3852	3796	301	240	839	-	759	7
17.	Hassan	2854	3252	2260	509	579	-	27	115
18.	Kodagu	592	1294	17277	230	442	-	15	-
19.	Mandya	1710	504	194	322	310	4	-	40
20.	Mysore	2379	2023	197	552	429	12	-	579
Total Area		76955	38280	33195	11299	13267	5972	2965	4438
Total production		657973	1132804	299009	141212	243989	131176	103530	43145

Continued

Sl. No.	Jack	Papaya	Ber	Fig	Rose apple	Litchi	Anona	Butter fruit	Others	Total
	11	12	13	14	15	16	17	18	19	20
1	107	247	1	4	12	1	29	16	175	4860
2	520	225	5	6	11	-	87	2	897	16522
3	382	413	26	-	-	-	108	-	54	6541
4	458	171	-	13	-	-	50	-	801	31195
5	1230	560	31	35	54	1	89	19	540	14540
6	572	109	-	-	-	-	91	-	-	10146
7	280	420	405	16	3	3	697	3	543	10303
8	-	66	876	3	-	-	111	-	821	11983
9	181	143	182	-	-	-	96	-	196	7251
10	600	142	-	-	43	-	141	-	598	7076
11	20	35	171	2	1	-	820	-	348	5291
12	4	53	145	9	15	2	155	-	652	6166
13	-	11	246	-	-	-	446	-	87	6272
14	6	106	136	7	-	-	155	-	158	6223
15	954	101	-	11	69	5	44	30	333	13265
16	2716	371	-	-	11	-	128	14	62	13096
17	1641	370	-	-	93	1	78	12	2	11793
18	23	56	-	-	-	-	13	5	35	19982
19	254	147	-	16	12	-	9	1	480	4003
20	579	475	15	1	33	-	59	8	113	7751
	10527	4221	2239	123	357	13	3406	110	6895	214264
	247258	178497	17013	458	1651	27	29192	406	62113	3289459

Source: (All tables - 4.32 to 4.35): Directorate of Horticulture.

Add to Part I: Page 643-44 :

Table 4.22

Area Under Vegetable Crops in Karnataka for the year 1990-91

Sl. No.	District	Potato	Tomato	Brinjal	Cole crops	Peas	Beans	Lady's finger	Radish
1	2	3	4	5	6	7	8	9	10
1.	Bangalore	620	785	464	589	41	572	251	99
2.	Bangalore (Rural)	1043	1861	958	871	153	605	325	236
3.	Chitradurga	-	1252	1258	166	6	176	368	185
4.	Kolar	6395	5056	737	1030	154	1209	446	281
5.	Shimoga	2	1714	885	455	16	742	392	285
6.	Tumkur	71	991	750	116	30	172	181	206
7.	Belgaum	12486	3110	1989	3469	355	1010	928	432
8.	Bijapur	-	1256	1244	28	4	26	765	382
9.	Dharwad	3984	2548	2992	650	359	1997	1591	905
10.	Uttara Kannada	-	272	307	-	-	141	274	192
11.	Bellary	-	2635	2066	32	-	120	324	-
12.	Bidar	1024	471	572	512	62	107	244	181
13.	Gulbarga	-	1445	1526	53	-	97	1407	398
14.	Raichur	18	1237	965	80	3	140	745	342
15.	Chikmagalur	1138	1016	518	514	76	586	254	297
16.	Dakshina Kannada	-	32	1286	-	-	913	1530	36
17.	Hassan	6856	1470	943	1573	-	1831	585	569
18.	Kodagu	-	68	25	82	-	-	15	-
19.	Mandya	43	1435	758	116	-	623	489	320
20.	Mysore	23	2338	1770	684	7	1042	584	540
Total Area		33698	36987	22013	11310	1256	12409	11363	5986
Total production		601889	597867	176582	205682	15705	144554	80121	37129

Cont'd

AGRICULTURE

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Area in Hectares, Production in tonnes

Sl. No.	Beet root	Carrot	Tapioca	Sweet Potato	Leafy vegetables	Chillies	Gourdvar	Others	Total
	11	12	13	14	15	16	17	18	19
1	51	112	38	34	427	22	329	113	4547
2	347	425	61	88	583	24	571	307	8485
3	24	33	-	-	588	88	232	472	4834
4	341	816	32	71	1064	75	118	808	18731
5	76	55	115	388	592	65	356	357	6495
6	6	18	23	15	520	8	86	39	3557
7	111	976	17	1343	2370	734	445	966	30741
8	-	613	-	319	994	76	1028	614	7419
9	159	214	81	-	1388	397	699	2681	29598
10	-	-	-	459	337	11	200	528	2721
11	17	11	-	74	1223	32	480	148	7462
12	72	213	38	129	170	244	204	30	4263
13	-	388	-	950	955	5	478	61	7403
14	35	61	-	331	441	41	388	868	5640
15	176	187	212	331	465	57	279	243	6344
16	-	-	1984	3441	1588	13	1137	778	12738
17	102	72	37	1536	645	136	247	1310	17942
18	-	-	63	29	60	-	-	72	409
19	2	5	31	255	468	192	440	652	6129
20	50	72	91	182	1235	63	748	1429	10808
	1569	4301	2823	10005	16063	2278	8410	12804	187275
	23794	66457	33495	129991	178876	1546	153612	148672	2954334

Add to Part I Page 641-42:

Table No 4.23

Area Under Plantation and spice crops in Karnataka for the year 1990-91

Sl. No.	District	Arec- anut	Coconut	Cashew	Cocoa	Betel Vine	Pepper	Carda- mom	Chillies	Onion
1	2	3	4	5	6	7	8	9	10	11
1.	Bangalore	110	3369	50	1	113	-	-	276	84
2.	Bangalore (Rural)	780	14292	173	3	139	1	-	1727	244
3.	Chitra- durga	5562	59379	17	1	1163	-	-	4180	9048
4.	Kolar	74	8802	2047	-	191	-	-	1486	1181
5.	Shimoga	14605	9310	4018	410	436	861	530	7248	1504
6.	Tumkur	6774	94994	237	-	1125	-	-	3378	95
7.	Belgaum	8	3471	2111	2	242	12	4	15466	1465
8.	Bijapur	-	3136	2111	-	241	12	4	3460	13236
9.	Dharwad	258	4829	88	4	2203	-	-	96600	18758
10.	Utara Kannada	8386	5447	-	143	485	565	322	175	86
11.	Bellary	-	3484	5	-	216	-	-	3077	2660
12.	Bidar	-	415	167	-	13	-	-	811	452
13.	Gulbarga	-	892	-	-	270	-	-	3239	3235
14.	Raichur	-	3955	-	-	112	-	-	2790	2528
15.	Chikma- galur	8614	23965	672	275	778	1689	5982	3809	2512
16.	Dakshina Kannada	23460	27003	52300	3353	562	2360	3457	2846	48
17.	Hassan	3708	43787	142	2	361	596	9565	2419	204
18.	Kodagu	423	4164	369	42	-	2162	13468	375	4
19.	Mandya	590	17939	133	1	161	-	-	624	66
20.	Mysore	745	21549	326	-	389	-	-	2956	754
Total Area		74097	354182	62855	4237	9738	8246	33328	156937	58164
Total production		91045	18,228	53220	2001	9,116	3571	1981	395283	334660

Continued

<i>Sl. No.</i>	<i>der</i>	<i>Corian-</i>	<i>Ginger</i>	<i>Turme-</i>	<i>Garlic</i>	<i>Cloves</i>	<i>Cinna-</i>	<i>Nutmeg</i>	<i>Sweet</i>	<i>Tama-</i>	<i>Others</i>	<i>Total</i>
<i>No.</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>16</i>	<i>17</i>	<i>18</i>	<i>19</i>	<i>20</i>	<i>21</i>	<i>22</i>	
1	144	55	44	21	-	-	-	-	318	60	4645	
2	143	69	68	78	-	-	-	-	934	302	19253	
3	725	2	1	24	-	-	-	-	1140	69	81311	
4	190	40	166	74	-	-	-	-	7249	231	21731	
5	216	2844	80	18	57	81	28	-	581	262	43114	
6	91	3	2	11	-	-	-	-	1036	546	24112	
7	564	45	1176	498	2	11	2	-	832	279	26220	
8	1138	-	442	594	-	-	-	-	1521	-	108244	
9	2297	52	10	1250	-	-	-	-	594	200	127143	
10	-	122	40	-	8	68	33	-	52	33	15910	
11	10553	41	-	6	-	-	-	-	3520	266	23828	
12	355	322	175	194	-	-	-	-	195	50	3149	
13	199	23	189	54	-	-	-	-	414	77	8592	
14	99	17	29	22	-	-	-	-	318	21	9891	
15	2933	141	69	131	19	23	14	-	946	121	52693	
16	8	798	414	-	134	13	100	-	956	91	117703	
17	158	42	129	191	1	10	-	-	297	370	61982	
18	3	77	57	-	7	4	-	-	13	32	21200	
19	259	7	139	83	-	-	-	-	409	502	20913	
20	1004	29	1301	36	-	-	-	-	736	72	29897	
<hr/>												
21074	4729	4531	3318	228	235	177	10	21861	3584	821531		
<hr/>												
21074	74707	67921	26441	80	59	71	5	20984	26330	1719362		

Add to Part I, page 647 :

Table No.4.24

Area Under Commercial flowers in Karnataka for the year 1990-91

Sl. No.	District	Area in Hectares									Production in tonnes	
		Roses	Chrysan- themum	Tube rose	Aster	Jasmine	Cross- andra	Marygold	Champ- apaka	Others	Total	
1.	Bangalore	102	180	51	63	128	31	135	4	17	711	
2.	Bangalore (Rural)	81	91	76	86	132	64	43	22	27	619	
3.	Chitradurga	22	196	25	55	192	272	53	8	22	845	
4.	Kolar	21	390	33	33	86	54	119	11	-	747	
5.	Shimoga	80	85	48	61	147	121	110	52	108	812	
6.	Tumkur	88	122	-	147	155	73	67	6	53	706	
7.	Belgaum	102	68	28	38	59	63	138	27	93	616	
8.	Bijapur	13	75	35	5	51	10	138	-	38	365	
9.	Dharwad	60	619	48	33	154	51	21	123	23	1132	
10.	Uttara Kannada	-	31	-	-	82	-	-	22	50	185	
11.	Bellary	6	17	1	-	379	12	-	-	-	415	
12.	Bidar	25	39	2	3	31	18	44	-	33	195	
13.	Gulbarga	11	12	3	-	45	2	118	-	-	191	
14.	Raichur	33	23	1	2	120	17	48	-	8	252	
15.	Chikmagalur	120	64	29	80	108	99	65	76	73	723	
16.	Dakshina Kannada	82	21	1	10	161	47	27	37	45	431	
17.	Hassan	50	163	-	54	73	-	106	16	68	530	
18.	Kodagu	27	4	-	-	15	-	6	-	5	57	
19.	Mandya	10	265	3	8	97	74	97	6	45	605	
20.	Mysore	62	148	667	5	162	164	63	76	61	1403	
Total Area		999	2608	1051	680	2377	1172	1398	486	769	11540	
Total Production		2626	13233	7806	5117	11846	3529	10441	2441	3791	60833	

Table No: 4.25

Area Under Horticultural Crops in Karnataka 1986-87 to 1990-91

Crops 1	Area in hectares				
	1986-87 2	1987-88 3	1988-89 4	1989-90 5	1990-91 6
I. FRUIT CROPS					
1. Mango	59164	62529	66732	71732	76955
2. Banana	36071	37087	38764	38513	38280
3. Citrus varieties	33319	33927	33841	35452	33195
4. Guava	9619	10372	10575	11951	11299
5. Sapota	11011	11524	12013	13949	13267
6. Grapes	5532	5370	5695	6188	5972
7. Pineapple	3276	3813	3964	3097	2965
8. Pomegranate	2093	2370	2560	3138	4438
9. Jack	9505	9795	9756	10111	10527
10. Papaya	5515	5048	4718	4318	4221
11. Ber	625	1325	1448	1319	2239
12. Fig	123	126	130	137	123
13. Rose Apple	175	197	232	339	357
14. Litchi	18	22	17	11	13
15. Anona fruits	2715	2945	2901	3206	3406
16. Butter fruits	150	83	101	90	110
17. Other fruits	4520	4729	6005	6166	6395
Total (Fruits)	182441	191248	199502	209250	214262
II. VEGETABLE CROPS					
1. Potato	32890	33446	38340	32926	33698
2. Tomato	24167	25966	28763	29906	30937
3. Brinjal	18842	20965	22078	22481	22013
4. Cole crops	10753	10819	12281	12246	11310
5. Peas	1108	1273	1474	1397	1256
6. Beans	9792	10930	12268	10792	12409
7. Ladies finger	9714	10437	11207	10575	11363
8. Radish	5309	4413	5041	5100	5986
9. Beetroot	1658	1422	1681	1671	1569
10. Carrot	2854	3093	3791	1585	4301
11. Tapioca	3781	3708	3951	3055	2823
12. Sweet potato	10159	10013	10598	11308	10005

Continued

1	2	3	4	5	6
13. Leafy vegetable	12841	14183	15506	15781	16063
14. Capsicum	1907	2259	2344	2114	2278
15. Gourd variety	7339	7137	7941	8457	8410
16. Others	10303	10310	10524	11855	12804
Total	163417	170424	188098	184004	187275
III. COMMERCIAL FLOWERS					
1. Roses	793	308	919	986	999
2. Chrysanthemum	1862	1259	2137	2696	2608
3. Tuberose	665	758	802	901	1051
4. Aster	539	585	624	690	680
5. Jasmine variety	2307	2357	1307	2130	2377
6. Crossandra	723	849	858	1252	1172
7. Marygold	1220	1288	1214	1251	1398
8. Champak	322	329	323	325	486
9. Others	406	516	775	706	769
Total	8827	9149	9489	10907	11540
IV. PLANTATION AND SPICES CROPS					
1. Arecanut	73011	73398	74075	68919	74097
2. Coconut (Nos)	328733	341145	344809	349129	354182
3. Cashewnut	66670	61752	62301	57927	62855
4. Cocoa	3884	3945	3982	4136	4237
5. Betevine	13322	11353	10070	10052	9738
6. Pepper	7486	7703	7920	8468	8246
7. Cardamom	30999	31019	31711	31399	33328
8. Chillies	153256	150092	157440	166702	156937
9. Onion	51717	56295	65056	58532	58164
10. Coriander	13278	12325	14491	19832	21074
11. Ginger	3374	3263	4619	4567	4729
12. Turmeric	4178	4673	4858	4070	4531
13. Garlic	3546	4694	4561	3441	3318
14. Cloves	170	177	137	210	228
15. Cinnamon	158	160	132	204	235
16. Nutmeg	105	130	164	173	177
17. Sweet Flag	173	35	10	10	10
18. Tamarind	21498	21463	21885	18927	21861
19. Others	2747	3300	2197	3038	3584
TOTAL	770305	786383	810389	803736	821531

Source : Directorate of Horticulture, Bangalore

Add Part I, page 671, after IIIrd para :

IRRIGATION

The ultimate irrigation potential from all sources is estimated at 55 lakh ha. i.e. 51.40 percent of the net area sown (1991-92). This would comprise of 35 lakh ha under Major and Minor irrigation projects, 10 lakh ha under minor irrigation using surface waters and another 10 lakh ha from ground water resources. The cumulative irrigation potential created is as follows: Major and Minor irrigation projects 13.36 lakh ha. Minor irrigation (surface water) 9.06 lakh ha and Minor irrigation (ground water) 8.06 lakh ha during 1990-91. The percentage of irrigation potential created to net area sown is 29 percent. The total estimated average yield of river systems in the State is about 3,440 TMC. The quantum of water that can be economically used for irrigation has been approximately assessed as 1,687 TMC. The gross ground-water recharge estimated is about 1.78 million hectare metres and the net usable recharge is estimated as 1.52 mham. The breakup of the net sown area and irrigated areas in the various agro-climatic zones is given here.

Table 4.26

Sl.No.	Agro-climatic zones	Net sown area	Irrigated area	Percentage of
		'000ha	'000ha	irrigated area to net sown area
1.	N.E. Transition Zone	570	42.20	7.41
2.	N.E. Dry Zone	1320	94.68	7.17
3.	Central Dry Zone	3580	784.67	21.92
4.	Northern Dry Zone	1002	184.53	18.42
5.	Eastern Dry Zone	713	215.80	23.64
6.	Southern Dry Zone	749	256.67	34.27
7.	Southern Transition Zone	681	171.09	25.12
8.	Northern Transition Zone	868	103.69	11.95
9.	Hilly Zone	588	133.61	22.72
10.	Coastal Zone	229	14.72	45.73
Total		10,500	2091.66	19.92

Karnataka has 5.07 percent of available yield of water of India (65,988 TMC). The utilizable yield of water was 1,654 TMC for the State and 23,026 TMC for the Country. The following table gives the major drainage basins in the State and the agro-climatic zones which they traverse.

Table No.4.27

Drainage Basins in Karnataka

<i>Sl.No</i>	<i>Name of the Basin</i>	<i>Area in '000 sq.km</i>	<i>Agro-climatic zones</i>
1.	Krishna Basin	113.00	2,3,4,8,9
2.	Godavary Basin	4.40	1
3.	Cauvery Basin	36.10	4,5,6,7,9
4.	Pennar Basins	13.70	5
5.	West Flowing	24.50	9,10
Total		191.79	

The distribution of the Ground water agro-climatic zonewise is given in the following table.

Table No.4.28

Availability of ground water
(agro -climatic zone-wise)

<i>Sl.No.</i>	<i>Agro-climatic zone</i>	<i>Net sown area</i>	<i>Usable recharge '000 ha</i>	<i>Per ha water available in metres</i>	<i>Net draft in cubic metres</i>
1.	N.E. Transition zone	570	606	100	125
2.	N.E. Dry zone	1,320	1,049	80	115
3.	Central Dry zone	3,580	2,860	80	899
4.	Northern Dry zone	1,002	1,336	140	618
5.	Eastern Dry zone	913	1,531	160	1042
6.	Southern Dry zone	749	1,604	220	286
7.	Southern Transition zone	681	1,357	200	113
8.	Northern Transition zone	868	1,180	140	331
9.	Hilly zone	588	2,449	420	87
10.	Coastal zone	229	1,267	550	419
Total		10,500	15,239	150	4,035

The areas in Eastern dry zone have been declared as grey and when the percentages of abstraction exceed 85, the area would be called as "dark". There is a proposal for enacting suitable legislative measures to regulate the use of groundwater and to prevent over exploitation.

The percentage of irrigated area to the total arable area is 17.24 in the State and 26.03 in the Country. The cost per hectare under Major and medium

irrigation projects has increased from Plan to Plan from Rs.1,520 during the First Plan to Rs.83,010 during the Seventh Plan. Under minor irrigation the cost per hectare has increased from Rs.2,207 to Rs.6,903.

The sources of irrigation (district-wise) is given in Table No.4.29; Gross area irrigated by source in the State from 1960-90 is given in Table No. 4.30; Net area irrigated by source (district-wise) is given in Table No.4.31; and gross cropped area and gross irrigated area cropwise in the State from 1960-1990 is given in Table No.4.32.

Table No. 4.29

Sources of Irrigation

Year/ District	Length of canals (kms)	Number of tube/bore- wells (00)	Other wells used for irrigation only (00)		Number of tanks	
			Masonry	Non- masonry	with an ayacat of less than 40 hectares	with an ayacat of 40 ha or more
1	2	3	4	5	6	7
1984-85	4,458	103	1,935	2,121	31,532	2,931
1985-86	4,489	184	1,992	2,150	31,551	2,947
1986-87	4,536	333	2,054	2,138	31,815	3,011
1987-88	4,596	419	2,062	2,205	31,962	2,965
1988-89	4,599	511	2,121	2,283	31,957	2,971
1989-90	4,599	544	212	228	31,957	2,971
1990-91	4,599	580	215	230	31,957	2,971
District wise Break up for 1988-89						
1. Bangalore	-	17	92	2	581	71
2. Bangalore (Rural)	106	68	234	99	1,096	152
3. Belgaum	310	54	124	383	751	135
4. Bellary	475	17	52	43	147	51
5. Bidar	10	5	58	113	36	41
6. Bijapur	119	6	50	449	16	91
7. Chikmagalur	50	5	9	16	2,088	92
8. Chitradurga	221	54	53	107	187	196
9. Dakshina Kannada	-	5	229	219	1,033	92
10. Dharwad	179	89	46	81	2,800	276
11. Gulbarga	149	2	43	176	291	81
12. Hassan	333	19	26	3	5,912	154
13. Kodagu	60	-	1	-	1,322	23

Continued

1	2	3	4	5	6	7
14. Kolar	-	116	351	245	3,024	274
15. Mandya	579	2	39	43	460	158
16. Mysore	1,420	1	183	29	1,076	130
17. Raichur	197	6	51	115	284	61
18. Shimoga	385	6	37	12	6,113	386
19. Tumkur	6	38	405	130	1,216	426
20. Uttara Kannada	-	1	38	21	3,524	81

Source : Statistical Abstract of Karnataka 1988-89 and Karnataka at a Glance for 1989-90 and 1990-91

Table No. 4.30

Gross area irrigated by source 1960-91

area in '000 hectares

Item	1960-61	1965-66	1970-71	1975-76	1980-81	1985-86	1989-90	1990-91
1	2	3	4	5	6	7	8	9
1. Net area irrigated (i to iv)	858	972	1365	1365	1361	1675	2094	2113
i. By canals	235 (27)	361 (38)	449 (33)	488 (36)	547 (40)	735 (44)	841 (40)	862 (41)
ii. By wells	133 (16)	160 (16)	458 (34)	336 (25)	364 (27)	429 (26)	520 (25)	561 (27)
iii. By tanks	344 (40)	324 (33)	365 (27)	410 (30)	304 (22)	242 (14)	281 (13)	240 (11)
iv. Other sources	146 (17)	127 (13)	93 (6)	131 (9)	146 (11)	299 (16)	452 (22)	450 (21)
2. Gross area irrigated	976	1038	1584	1707	1678	2012	2579	2598
3. Net area sown	10228	10042	10248	10360	9899	10172	10708	10381
4. Gross area sown	10558	10429	10889	11159	10660	11146	12115	1159
Percentage of 1 to 3	8.4	9.7	13.3	13.2	13.7	16.5	19.6	20.3
Percentage of 2 to 4	9.2	10.0	14.5	15.3	15.7	18.1	21.3	22.1
Percentage of 4 to 3	103.5	103.9	106.3	107.7	107.7	109.6	113.1	113.3
Percentage of 2 to 1	113.8	106.8	116.0	125.1	123.3	120.1	123.2	122.9

Note : Figures in brackets indicate percentages.

Source : Statistical Abstract of Karnataka 1988-89 and Karnataka at a Glance for 1989-90&1990-91

Table No. 4.31

Net Area Irrigated by Source

(Hundred hectares)

Year/ District 1	Canals 2	Tanks 3	Wells 4	Tube wells 5	Other sources 6	All sources 7
1960-61	2,357	3,436	1,328	-	1,458	8,579
1965-66	3,603	3,243	1,601	-	1,276	9,723
1970-71	4,487	3,648	4,585	11	924	13,655
1975-76	4,877	4,103	3,359	1	1,307	13,647
1980-81	5,466	3,037	3,637	6	1,462	13,608
1984-85	7,046	3,263	4,424	202	1,996	16,931
1985-86	7,348	2,420	4,391	418	2,173	16,750
1986-87	7,996	2,592	4,492	747	2,337	18,164
1987-88	7,655	2,580	4,764	999	2,536	18,534
1988-89	8,456	3,241	5,129	1,350	2,741	20,917
1989-90	8,410	2,810	6,730*		2,990	20,940
1990-91	8,620	2,400	7,140*		2,970	21,130
District wise breakup for 1988-89						
1. Bangalore	Nil	80	97	33	1	211
2. Bangalore (Rural)	17	231	229	87	13	577
3. Belgaum	687	39	779	180	787	2,472
4. Bellary	1145	55	248	93	162	1,703
5. Bidar	3	12	311	8	8	342
6. Bijapur	637	101	1028	11	523	2,300
7. Chikmagalur	65	101	22	13	77	278
8. Chitradurga	686	178	211	277	47	1,399
9. Dakshina Kannada	-	36	296	9	539	880
10. Dharwad	440	276	165	199	232	1,312
11. Gulbarga	726	98	276	3	20	1,123
12. Hassan	161	281	23	28	77	570
13. Kodagu	39	2	N	-	12	53
14. Kolar	-	299	362	321	-	982
15. Mandya	816	93	76	2	15	1,002
16. Mysore	794	107	344	2	17	1,264
17. Raichur	1,518	29	220	17	59	1,843
18. Shimoga	719	556	67	9	69	1,422
19. Tumkur	3	571	332	57	3	966
20. Uttara Kannada	-	94	43	1	80	218

* including borewells

Source : Statistical Abstract of Karnataka 1988-89 and Karnataka at a Glance for 1989-90 & 91

Table No. 4.32

Gross cropped area and gross area irrigated cropwise 1960-90

Area in '000 hectares

Item	1960-61	1965-66	1970-71	1975-76	1980-81	1985-86	1989-90
1	2	3	4	5	6	7	8
1. Gross cropped area i to ix	10,588	10,429	10,889	11,159	10,660	11,146	12,115
i) Rice	1,028	1,149	1,170	1,171	1,114	1,096	1,183
ii) Ragi	996	1,260	1,065	1,078	1,057	1,109	1,167
iii) Jowar	2,969	2,877	2,224	1,945	1,991	2,318	2,339
iv) Maize	11	18	63	127	157	167	253
v) Tur	296	307	304	321	336	420	482
vi) Groundnut	915	903	1,027	1,024	790	1,012	1,194
vii) Cotton	984	1,005	1,142	1,035	1,012	674	697
viii) Sugarcane	72	89	104	137	154	171	265
ix) All other crops	3,317	2,821	3,790	4,321	4,049	4,179	4,535
2. Gross area irrigated	976 (9.2)	1,038 (10.0)	1,584 (14.5)	1,707 (15.3)	1,678 (18.7)	2,012 (18.1)	2,579 (21.3)
i) Rice	616	641	772	762	624	624	737
ii) Ragi	50	42	125	106	83	106	94
iii) Jowar	39	71	118	118	93	145	186
iv) Maize	10	14	57	97	129	136	196
v) Tur	3	2	1	-	1	6	8
vi) Groundnut	10	10	91	84	102	180	245
vii) Cotton	18	38	60	63	67	191	177
viii) Sugarcane	58	89	102	136	154	171	264
ix) All other crops	173	131	258	341	425	453	672

Source : Statistical Abstract of Karnataka 1988-89 and Karnataka at a Glance for 1989-90

Table No.4.33 Completed Major and Medium Irrigation Projects

Sl. No.	Name of the project and place (district)	Year of commencement	Planned utilisation (m cum)			Irrigation potential		Expenditure incurred in crores of rupees	year of completion	Catchment area in sq. km
			Maximum	By canals	Ultimate	Created				
1	2	3	4	5	6	7	8	9	10	
I. Major										
1.	Cauvey anicut channels; Mysore, Hassan, Mandya, Kodagu & Bangalore	-	1,390.00	-	77,172	77,172	-	Before 1990	-	-
2.	Nugu, Mysore	1946	217.91	198.10	10,526	10,526	3.15	1959	98	
3.	Tunga, Shimoga	1946	325.45	325.45	8,704	8,704	3.31	1956	2240	
4.	Vanivalas Sagar, Chitradurga	1897	232.00	167.00	9,184	9,184	0.45	108	5374	
5.	Vijayanagar Channels, Bellary and Raichur	1600	341.00	-	12,210	12,210	-	-	-	
Total (major)			2506.36	690.55	1,17,796	1,17,796	6.91	-	7712	
II. Medium										
1.	Ambligolla, Shimoga	1947	39.62	36.79	2,955	2,955	1.16	1955	144	
2.	Anjanapur, Shimoga	1927	70.75	61.41	6,378	6,378	0.21	1938	520	
3.	Areshankar, Bijapur	1953	10.75	9.83	1,255	1,255	-	1957	177	
4.	Bachanki, Uttara Kannada	1969	14.72	13.32	1,776	1,776	0.37	1974	60	
5.	Bhadra anicut, Shimoga	1917	87.73	87.73	4,466	4,466	-	1923	837	
6.	Byramangala, B'lore	1940	28.30	26.04	1,619	1,619	-	1971	376	
7.	Chandrampalli, Gulbarga	1966	53.77	49.52	5,223	5,223	1.85	1972	440	

continued

Sl. No.	Name of the project and place (district)	Year of commencement	Planned utilisation (m cum)			Irrigation potential		Expenditure incurred in crores of rupees	year of completion	Catchment area in sq.km
			Maximum	By canals	Ultimate	Created				
1	2	3	4	5	6	7	8	9	10	
8.	Chikkahole, Mysore	1958	19.81	18.68	1,650	1,650	4.24	1969	407	
9.	Chithwadgi, Mysore	1966	7.36	5.92	890	890	0.41	1971	145	
10.	Dharma, Uttara Kannada	1957	62.26	56.60	6,842	6,842	1.33	1964	98	
11.	Gayathri, Chitradurga	1952	12.74	-	950	950	-	1963	1,831	
12.	Gokak canal, Belgaum	1877	39.62	39.62	5,757	5,757	-	1897	2,765	
13.	Gundal, Mysore	1970	39.62	36.33	4,048	4,048	4.52	1980	93	
14.	Hagaribommanahalli, Bellary	1960	56.60	42.45	2,966	2,966	3.95	1978	2,347	
15.	Hathikoni, Gulbarga	1960	14.15	12.73	2,145	2,145	0.84	1973	132	
16.	Hebballa, Mysore	1958	11.32	10.19	1,214	1,214	0.54	1972	181	
17.	Jambadahalla, Chickmagalur	1958	19.81	14.51	1,538	1,538	1.15	1968	155	
18.	Kalakop, Bijapur	1957	9.34	8.19	1,143	1,143	-	1960	130	
19.	Kanakanala, Raichur	1960	11.32	10.57	2,064	2,064	1.00	1975	193	
20.	Kanva, Bangalore	1940	33.96	28.30	2,024	2,024	0.35	1944	340	
21.	Kolchiweir, Belgaum	1949	15.00	15.00	1,275	1,275	0.43	1953	2,953	
22.	Mangala, Tumkur	1961	16.98	15.85	850	850	0.60	1970	748	
23.	Marconahalli, Tumkur	1939	113.20	101.88	6,073	6,073	0.35	1941	4,103	
24.	Nagathana, Bijapur	1958	2.26	1.97	650	650	0.15	1961	68	
25.	Narayanapura anicut, Chitradurga	1952	17.00	17.00	2,003	2,003	0.34	1961	988	
26.	Narihalla, Bellary	1972	25.47	20.46	1,512	1,512	3.20	1979	427	
27.	Rajolibanda, Raichur	1947	33.96	30.53	2,380	2,380	0.52	1960	61,427	
28.	Ramanahalli, Bijapur	1954	12.45	10.19	1,943	1,943	0.42	1958	374	
29.	Survanavathi, Mysore	1965	101.88	93.66	2,833	2,833	3.81	1984	108	
Total (Major + Medium)			982.11	875.33	76,422	76,422	32.14		82,566	

Table No.4.34

Irrigation Projects Under Execution

Sl. No.	Name of the project and place (district)	Year of commencement	Irrigation potential (hectares)			Expenditure in crores of rupees		Catchment area in hectares	Year of completion
			Ultimate	Created upto March 1988	Estimated	Revised	Upto March 1988		
1	2	3	4	5	6	7	8	9	10
A. Project - Irrigation Potential already created									
A. i) Approved Projects:									
1.	UKP Stage I, Bijapur	1969	4,25,935	1,06,763	283.65	1,071.10	460.19	81,225	1995
2.	Ghataprabha (1+2+3), Belgaum	1948	3,17,447	1,63,551	136.82	487.17	81.78	1,412	1990
3.	Malaprabha, Belgaum	1960	2,18,191	1,44,054	162.09	307.35	199.63	2,546	VIII Plan
4.	Bhadra, Chikmagalur	1947	1,05,570	1,05,540	8.88	66.00	60.09	1968	1988
5.	Tungabhadra, Bellary & Raichur	1945	3,62,795	3,47,978	31.42	112.57	104.62	28,180	1990
6.	Upper Mullamari, Bidar	1976	3,279	1,255	3.28	15.26	9.12	207	1990
7.	Saudagar, Gulbarga	1973	1,417	1,417	1.49	6.00	3.57	56	1987
8.	Ranikere, Chitradurga	1979	3,238	283	2.30	5.29	3.29	9,998	1988
9.	Taraka, Mysore	1970	8,903	6,658	1.70	12.00	11.75	277	1988
10.	Votehole, Hassan	1977	7,487	3,208	2.05	21.00	15.39	110	1990
11.	Teetha, Tumkur	1976	1,214	1,214	1.06	4.10	3.73	175	1987
12.	Manchanabele, B'lore	1976	3,845	800	5.00	18.50	14.14	1590	1989
Total			14,58,321	8,82,721	639.74	2,121.34	967.30	1,27,744	

AGRICULTURE

Sl. No.	Name of the project and place (district)	Year of commencement	Irrigation potential (hectares)		Expenditure in crores of rupees Revised	Catchment area in hectares Upto March 1988	Year of completion		
			Ultimate	Created upto March 1988					
1	2	3	4	5	6	7	8	9	10
A. ii) Project pending approval:									
1.	Harangi, Kodagu	1964	53,538	31,290	11.00	122.00	93.99	420	
2.	Hemavathi, Hassan	1968	2,65,079	58,748	16.30	588.00	261.17	2,810	
3.	Kabini, Mysore	1959	87,900	38,445	28.40	390.00	123.10	2,142	
4.	KRS (Varuna), Mysore	1979	32,376	395	18.50	58.10	17.48	10,619	
5.	Chiklihole, Kodagu	1978	2,752	64	3.40	7.00	4.63	54	1990
6.	Iggalur, Bangalore	1979	4,047	1,412	3.42	10.75	2.78	7,050	1990
7.	Nallur Amanikere, Mysore	1975	1,300	1,300	1.90	5.30	5.14	417	1987
Total			4,46,992	1,31,654	82.92	1,181.15	508.29	23,512	
Total (A. i + A. ii)			19,05,313	19,14,375	722.66	2,307.49	1475.59	1,51,256	
B. Project - Irrigation Potential not yet created									
B. i) Projects approved:									
1.	Dudhganga, Belgaum	-	19,668	-	-	26.00	2.07	-	-
2.	Hippargi barrage, Bijapur	1973	59,690	-	21.53	186.70	4.36	22,699	1992
3.	Bennithora, Gulbarga	1973	20,236	-	12.27	50.12	11.06	2,204	8th Plan
4.	Karanja, Bidar	1972	35,614	-	9.90	89.73	43.66	2,025	-do-
5.	Varahi, Shimoga	1980	15,702	-	9.43	70.00	1.82	277	-do-
6.	Ramanahalli, Bijapur	1983	22,206	-	45.25	54.00	-	-	-do-
7.	Amarja, Gulbarga	1975	8,903	-	5.70	25.10	6.26	531	-do-
8.	Lower Mullamari, Gulbarga	1975	9,713	-	3.70	29.75	4.25	730	-do-
9.	Hirehalli, Raichur	1977	8,013	-	6.35	18.34	2.31	938	-do-

Continued

Sl. No.	Name of the project and place (district)	Year of commencement	Irrigation potential (hectares)		Expenditure in crores of rupees		Catchment area in hectares	Year of completion	
			Ultimate	Created upto March 1988	Estimated	Revised			Upto March 1988
1	2	3	4	5	6	7	8	9	10
10.	Maskinala, Raichur	1976	2,833	-	3.11	15.90	2.16	800	-do-
11.	Chulkinala, Bidar	1976	4,047	-	3.80	15.80	2.74	243	-do-
Total			206,679	-	147.04	431.44	80.89	30,447	
B. ii) Project pending approval:									
1.	Yagachi, Hassan	1983	21,450	-	35.38	35.38	3.06	557	8th Plan
2.	Arkavathy, Bangalore	1975	8,560	-	22.25	24.70	4.74	1970	-do-
3.	Udathorehalla, Mysore	1978	6,273	-	7.55	33.42	1.20	20,220	-do-
4.	Chickkahle Diversion, Mysore	1985	-	-	0.58	1.22	0.75	-	1988-89
Total			36,283	-	65.76	101.88	9.75	22,747	
Total (B.i + B.ii)			2,42,962	-	221.80	533.32	90.44	53,194	
Total (A + B)			21,48,275	10,14,375	935.46	3,840.82	1566.03	2,04,720	

Source:1) Irrigation Projects in Kamataka (Major and Medium) 1986-87, Government of Kamataka, 1987, Bangalore.

2) Irrigation Projects in Kamataka (Major and Medium) 1988-89, Government of Kamataka, 1989, Bangalore.

Add to Part I, page 683, after table:

Table No.4.35

Minor Irrigation Census in Karnataka 1986-87

Sl	District	No. of dug wells		With electric pump sets	Gross potential created (in ha)	Net area irrigated (ha) during 1986-87
		In use	Not in use			
1	2	3	4	5	6	7
1.	Bangalore	23,951	3,136	23,251	29,367	26,769
2.	Bangalore (Rural)	7,509	1,846	7,395	9,521	8,600
3.	Belgaum	51,033	7,174	43,625	80,910	72,424
4.	Bellary	8,849	884	9,576	30,432	30,212
5.	Bidar	15,090	1,234	15,119	28,360	23,634
6.	Bijapur	39,927	3,784	37,622	58,699	58,641
7.	Chikmagalur	2,630	256	1,697	4,079	4,011
8.	Chitradurga	13,109	734	12,795	30,448	27,212
9.	Dakshina Kannada	38,531	240	19,206	46,302	44,989
10.	Dharwad	7,808	2,486	8,027	16,612	15,543
11.	Gulbarga	15,458	5,942	11,234	31,177	26,272
12.	Hassan	3,421	254	2,440	4,814	4,541
13.	Kodagu	402	11	247	1,662	1,651
14.	Kolar	32,624	10,742	33,648	82,410	34,672
15.	Mandya	7,759	478	6,131	9,720	8,537
16.	Mysore	14,243	965	13,679	29,376	26,508
17.	Raichur	14,708	2,013	13,284	31,060	30,211
18.	Shimoga	4,006	404	3,439	6,523	5,992
19.	Tumkur	38,465	5,743	35,403	47,174	40,437
20.	Uttara Kannada	12,973	101	5,383	4,984	4,771
Total		3,52,685	48,329	3,03,103	5,83,630	4,95,667

Source: Irrigation Department.

Continued

Sl. No.	No. of shallow tube wells				No. of deep tube wells			
	In Use	Not in use	Gross potential created (ha)	Net area irrigated (ha)	In use	Not in use	Gross potential created (ha)	Net area irrigated (ha)
	8	9	10	11	12	13	14	15
				1986-87				1986-87
1	4,871	268	9,577	8,342	701	16	1,369	1,324
2	3,841	102	6,097	5,997	296	21	720	694
3	3,729	104	7,726	7,574	622	111	1,402	1,340
4	1,118	64	5,312	5,179	310	7	1,511	1,492
5	197	7	439	343	63	7	99	89
6	584	13	1,841	1,789	134	27	316	287
7	467	85	1,233	1,189	1	-	20	20
8	4,739	48	15,496	14,455	137	4	508	482
9	472	8	928	928	75	1	168	159
10	4,695	301	15,216	14,648	674	95	1,840	1,806
11	177	76	432	383	15	27	81	79
12	1,233	59	2,170	2,132	10	1	54	33
13	7	-	83	83	3	18	12	12
14	6,270	300	12,820	12,671	2828	71	6,162	5,718
15	112	5	233	215	11	-	44	42
16	651	29	1,550	1,380	57	-	127	122
17	537	37	2,639	2,638	91	2	399	395
18	2,051	76	7,547	4,084	111	6	391	357
19	3,060	310	6,157	5,506	506	37	1,243	1,201
20	88	39	304	265	28	-	56	725
	38,899	1931	94,800	89,811	6,673	451	16,522	15,708

Continued

<i>Surface flow irrigation schemes</i>			<i>Lift irrigation schemes</i>			
<i>Sl. No.</i>	<i>No. of schemes</i>	<i>Gross irrigation potential created</i>	<i>Net area irrigated 1986-87</i>	<i>No. of schemes</i>	<i>Gross Irrigation potential created(ha)</i>	<i>Net area irrigated 1986-87(ha)</i>
	16	17	18	19	20	21
1	813	21,667	20,401	452	1,353	1,318
2	434	9,753	9,189	14	958	827
3	537	25,332	4,819	7,795	31,341	30,842
4	185	7,834	5,622	1,454	32,267	23,988
5	33	15,004	1,448	309	2,951	1,063
6	275	17,747	11,411	7,370	26,593	25,296
7	1,309	20,552	16,634	523	6,580	6,102
8	380	31,881	13,517	927	8,355	6,862
9	1,786	5,963	5,552	2,186	3,691	3,568
10	1,830	39,825	12,452	3,380	17,927	16,127
11	234	12,046	3,456	843	8,766	2,856
12	3,088	33,592	7,972	39	898	830
13	382	6,727	3,271	741	6,658	5,906
14	2,984	57,371	37,326	82	78	71
15	578	14,499	8,126	37	3,142	1,509
16	3,251	35,401	19,256	197	6,228	4,506
17	249	7,548	3,823	663	12,144	11,704
18	4,641	64,404	43,525	1,474	6,246	5,688
19	1,149	51,977	28,930	78	1,163	1,038
20	725	15,297	4,134	311	963	871
	21,637	4,94,420	2,60,864	28,875	1,78,302	1,49,972

Add to Part 1, page 697 :

Table No.4.36

The Planwise Progress of Irrigation is Indicated in the following table:

Plan period	Investment on irrigation (Rs. in crores)			Area under irrigation (cumulative in lakh ha) (for July-June period)				
	Year	Major & medium	Minor	Total	Major & medium	Minor	Total	% net sown area
Prior to First plan		-	-	-	2.16	4.55	6.71	6.33
First plan	51-56	37.27	4.15	41.42	2.63	4.62	7.25	6.84
Second plan	56-61	59.82	5.08	34.90	3.99	4.79	8.78	8.28
Third plan	61-66	33.99	15.79	49.78	5.77	5.34	11.11	10.48
Annual plan	66-69	33.74	13.18	46.92	6.99	6.12	13.11	12.37
Fourth plan	69-74	139.00	23.03	162.03	7.21	6.96	14.17	13.37
Fifth plan	74-78	188.36	37.21	225.57	8.82	8.08	17.06	16.09
Annual plan	78-79	90.18	13.89	104.07	9.24	8.35	17.59	16.59
Annual plan	79-80	101.86	16.82	118.68	9.71	8.54	18.25	17.38
Sixth plan (1)	80-81	97.70	20.96	118.66	9.91	8.76	18.67	17.78
(2)	81-82	105.50	20.92	126.42	10.20	8.80	19.00	18.10
(3)	82-83	115.58	13.69	129.27	10.66	9.01	19.67	18.73
(4)	83-84	124.55	18.27	142.82	11.20	9.11	20.31	19.34
(5)	84-85	140.04	20.64	160.68	11.61	8.66*	20.27	19.81
Total during Sixth plan	80-85	583.37	94.48	677.85	1.96	0.59	2.55	
Seventh plan (1985-1990) (1)	85-86	156.46	28.65	185.11	12.27	8.72	20.99	20.64
(2)	86-87	170.68	41.21	211.89	12.75	8.78	21.53	20.44
(3)	87-88	138.46	26.36	164.82	12.87	8.83	21.70	20.40
(4)	88-89	166.81	31.77	198.58	12.97	8.93	21.90	20.85
(5)	89-90	209.68	29.58	239.26	13.09	9.03	22.12	20.66
Eighth plan (1)	90-91	243.81	32.40	276.21	13.36	9.06	22.42	22.01
(p)	91-92	309.79	35.36	345.15	13.79	9.11	22.90	22.00
(@)	92-93	475.00	51.27	526.27	14.35	9.21	23.56	

Source: Economic Survey 1990-91, 1991-92 and 1992-93

Note:1. (P) - Provisional (@) - Anticipated. 2. Figures for VI and VII plan are for the financial year period i.e. from April to March.

* Excludes the area of Rs.0.77 lakh ha under Cauvery anicut which is accounted for under major and medium irrigation.

ANIMAL HUSBANDRY

Add to Part I, page 703, after 1st table :

Table No.4.37

Livestock and Poultry Population 1977, 1983 and 1990

(in000's)

Sl.No.	Category	1972 Census	1977 Census	1983 Census	1990 Census
1.	Livestock	21,962	21800	26148	24968
	Cattle				
a.	Oxen	3,801	3877	4043	3551
b.	Cows	3,736	3826	3934	3662
c.	Young stock	2,481	2519	3323	2962
	Total (a to c)	10,018	10222	11300	10175
2.	Buffaloes				
a.	He buffaloes	305	297	275	234
b.	She buffaloes	1,800	1919	2026	2256
c.	Young stock	1,110	1062	1347	1548
	Total (a to c)	3,215	3278	3548	4038
3.	Total Bovines (1+2)				
a.	Males	5,722	5764	6042	5281
b.	Females	7,511	7736	8906	8932
	Total (a + b)	13,233	13500	14948	14213
1.	Sheep	4,662	4536	4792	4727
2.	Goats	3,726	3388	4547	3889
3.	Horses and ponies	34	27	24	20
4.	Mules	0.9	1	2	1
5.	Donkeys	45	51	48	35
6.	Camels	1.4	1	Neg*	Neg*
7.	Pigs	216	296	319	304
8.	Dogs	NA	NA	1468	1779
	Total (3 to 8)	21,963	21800	26148	24968
4.	Poultry				
1.	Ducks	42	38	190	92
2.	Fowls	10,119	9653	11886	15531
3.	Other poultry	3.3	5	21	71
	Total (1 to 3)	10,163	9696	125097	15694

* Negligible

Source: Statistical Abstract of Karnataka, 1976-77, 1988-89 Karnataka Economic Review 1991-92

Add to Part I, page 704, after table:

Table No. 4.38

Livestock and poultry, 1990 Census

(in thousands)

<i>Sl. District No.</i>	<i>Cattle</i>	<i>Buffaloes</i>	<i>Sheep</i>	<i>Goats</i>	<i>Other livestock</i>	<i>Total livestock</i>	<i>Poultry</i>
1. Bangalore	210	37	92	47	77	463	1,604
2. Bangalore (Rural)	468	119	234	161	78	1,060	2,130
3. Belgaum	511	580	435	385	138	2,049	695
4. Bellary	485	181	279	233	64	1,242	635
5. Bidar	273	149	73	95	50	640	341
6. Bijapur	524	307	348	531	137	1,847	641
7. Chikmagalur	418	110	27	72	87	744	378
8. Chitradurga	456	262	360	243	87	1,408	536
9. Dakshina Kannada	666	183	1	19	176	1,145	1,701
10. Dharwad	668	279	256	314	113	1,630	637
11. Gulbarga	769	195	308	316	113	1,701	537
12. Hassan	580	197	164	146	96	1,183	912
13. Kodagu	158	49	N	8	96	311	371
14. Kolar	500	162	488	188	144	1,482	696
15. Mandya	357	223	341	183	69	1,173	616
16. Mysore	834	164	298	267	105	1,668	1,133
17. Raichur	611	211	364	267	96	1,549	403
18. Shimoga	699	269	29	104	102	1,203	604
19. Tumkur	609	245	597	297	126	1,874	575
20. Uttara Kannada	380	115	3	13	85	596	529
State Total	10,176	4,037	4,727	3,889	2,139	24,968	15,694

Source: Karnataka at a Glance, 1991-92

Add to Part I, page 705 :

Table No.4.39

Veterinary Institutions

(Numbers)

Year/district	Veterinary hospitals	Veterinary dispensaries	Rural Veterinary dispensaries	Veterinary aid centres	Mobile Veterinary clinic	Total
1	2	3	4	5	6	7
1960-61	28	163	329	-	-	520
1965-66	30	164	418	-	-	612
1970-71	31	236	488	62	-	817
1975-76	33	352	676	60	-	1,121
1980-81	33	479	725	59	-	1,296
1984-85	33	492	653	55	123	1,356
1985-86	33	492	653	55	123	1,356
1986-87	33	495	653	55	137	1,373
1987-88	33	495	653	55	137	1,373
1988-89	33	495	653	55	163	1,399
1989-90	33	1,353*	-	-	164	1,550
1990-91	187*	452	942	-	164	1,745
1991-92	188	522	1118	-	176	2,004
Districtwise 1988-89						
1. Bangalore	2	25	11	-	1	39
2. Bangalore (Rural)	-	21	30	-	8	59
3. Belgaum	1	28	37	14	10	90
4. Bellary	1	20	23	0	8	52
5. Bidar	1	13	14	-	4	32
6. Bijapur	1	27	26	17	4	75
7. Chikmagalur	1	23	31	-	7	62
8. Chitradurga	1	31	47	-	9	88
9. Dakshina Kannada	2	23	35	2	8	70
10. Dharwad	4	39	43	14	17	117
11. Gulbarga	1	22	42	-	10	75
12. Hassan	2	26	38	1	8	75
13. Kodagu	1	12	19	-	3	25
14. Kolar	2	29	34	-	11	76
15. Mandya	1	28	17	-	7	53
16. Mysore	2	32	56	-	11	101
17. Raichur	4	15	22	-	9	50
18. Shimoga	2	28	50	-	8	88
19. Tumkur	1	36	52	-	10	99
20. Uttara Kannada	3	17	26	7	10	63

Source: Department of Animal Husbandry and Veterinary Services.

* Increase due to upgradation of taluk level dispensaries; ** reclassified during 1990-91

Add to Part I, page 706 :

Table No.4.40
Animals Treated and Castrated in Veterinary Hospitals and Dispensaries
(hundreds)

Year/district	Castrations performed				Animals treated			
	Bovines	Ovines	Others	Total	Bovines	Ovines	Others	Total
1960-61	1,419	*	472	1,891	15,496	*	3251	18,747
1965-66	1,568	*	726	2,294	22,259	*	4886	27,145
1970-71	701	*	478	1,179	1,337	*	751	2,028
1975-76	2,531	*	1,216	3,747	1,898	*	780	2678
1980-81	2,433	596	705	3,734	39,013	4,121	2,458	45,592
1984-85	2,433	1,610	453	4,496	41,677	6,635	4,933	53,245
1985-86	4,189	4,508	214	8,911	60,103	10,107	6,115	76,325
1986-87	4,373	3,877	297	8,547	63,958	11,548	6,914	82,420
1987-88	4,421	3,964	272	8,657	76,726	14,385	13,134	104,245
1988-89	2,737	2,427	142	5,306	49,873	9,940	5,484	65,397
Districtwise Breakup for 1988-89								
1. Bangalore	90	69	11	170	1,367	180	725	2,272
2. Bangalore (Rural)	146	276	3	425	2,069	462	120	2,651
3. Belgaum	149	51	1	201	2,336	478	237	3,051
4. Bellary	93	27	N	120	2089	591	123	2,803
5. Bidar	37	N	N	37	1,381	301	65	1,747
6. Bijapur	93	28	1	122	1,632	460	121	2,213
7. Chickmagalur	131	104	4	239	3,439	348	445	4,232
8. Chitradurga	208	217	6	421	3,497	974	101	4,572
9. Dakshina Kannada	84	3	3	90	2,046	45	559	2,650
10. Dharwad	132	103	1	236	4,518	1,916	288	5,722
11. Gulbarga	46	5	N	51	2,343	690	159	3,201
12. Hassan	190	214	1	405	2,517	361	213	3,091
13. Kodagu	60	13	17	90	1,006	49	410	1,465
14. Kolar	261	260	2	523	3,528	1036	268	4,832
15. Mandya	212	231	20	463	2,591	776	227	3,594
16. Mysore	173	176	29	378	2,893	510	401	3,804
17. Raichur	37	5	N	62	1,749	438	88	2,275
18. Shimoga	160	61	27	248	4,278	424	362	1,664
19. Tumkur	370	581	15	966	3,333	818	245	4,396
20. Uttara Kannada	45	3	1	49	1,261	74	327	1,662

Note: * included in others,

Source: Department of Animal Husbandry and Veterinary Services.

FISHERIES

Add to Part I, page 745, before Inland Fisheries:

An area of 5,000 sq.km of continental shelf (out of 25,000 sq.km) is being exploited by small mechanised boats (1990). State's marine fishing has 1,964 shrimp trawlers, 395 purse-seiners, 877 machanised gillnet units and others 599 (total mechanised boats being 3,783) in addition to 11,979 traditional boats intensively operating in the inshore waters. Nearly 45,000 fishermen are engaged in fishing activities in the coastal districts. The State has over 8,000 ha of brackish water resourcess, out of which, 4,200 ha are identified as suitable for prawn farming. About 2,000 ha of Kharland and 1,000 ha of salt pans can be utilised for raising one crop of prawns by stocking and artificial feeding to produce about 500 to 600 kg. of prawn. Brackish water fish farmers development agency with central assistance has been established at Karwar with jurisdiction over two coastal districts for the upgradation of technology for prawn and fish farming.

Add to Part I, page 745, after IInd para :

Inland Fisheries

Inland fisheries play an important role in the economy of the State for augmenting food supply, generating employment and raising nutritional value. Less than half of the existing inland fishery potential (4.57 lakh ha of inland fishery resources, consisting of 2.35 lakh ha of tanks and ponds, 2.22 lakh ha of reserviors and 6,000 km of rivers) is being utilised for fish production, mainly on account of shortage of fish seed. Efforts are being made to increase fish seed production. Some of the Zilla Parishads like Bangalore have taken up this programme very fruitfully.

Add to Part I, page 754, at the end :

Strategy of Fisheries Development.

The strategy aims at increasing the utilisation of State's potential in fisheries and thereby augment the supply of nutritional food and improve economic condition of population dependent on fishing activity. In inland fisheries development, emphasis is laid on the following: i) conservation measures, restricting indiscriminate fishing during breeding season, ii) expansion of area under fish farms, iii) setting up new fish seed rearing centres near selected reservoirs, besides encouraging entrepreneurs to take up fish seed production, iv) development of reservoir fisheries, v) development of infrastructural facilities i.e., transport and marketing.

Eighteen fish farms have been transferred to Karnataka Inland Fisheries

Development Corporation to manage seed farms on commercial lines and increase production. Under the Centrally-sponsored national fish seed production programme, the construction of a 10 ha fish seed farm with Chinese hatchery was taken up at a total cost of Rs.52 lakhs at B.R. Project. Fifty six ponds have already been constructed at a cost of Rs.20 lakhs during 1990-91. On completion of this farm, anticipated fish seed production is about 50 million. In order to accelerate development of inland fisheries in the State, NCDC Reservoir Fisheries Project at a cost of Rs.473.88 lakhs has been taken up for implementation in Mysore dt through the newly established Karnataka Inland Fisheries Federation. Two fish seed farms of 10 ha each with hatchery will be established at the Kabini and the Gundal to produce additional 50 million fry for stocking in the project tanks in Mysore dt.

The Centrally-sponsored Fish Farmers Development Agencies functioning in eight districts and three State FFDA have trained 2,910 fish farmers in intensive fish culture practices and brought 7,747 ha of water area under improved fish culture and 3,646 tonnes of fish was produced by the agencies from 1985-90.

For marine fisheries, fish production strategy include i) construction of minor leasing harbours in order to provide landing and berthing facilities to small boats and country crafts which are facing problems in major fishing harbours, ii) emphasis on offshores and deep-sea fishing, in view of in-shore fisheries exploitation reaching saturation point, iii) rehabilitation of people affected by Naval base, iv) training and extension programmes by strengthening existing training centres and v) augmenting the needed infrastructural facilities.

Major development activities consisted of construction of Mangalore harbour, improvement and maintenance of existing fishing harbours, implementation of the DANIDA assisted Indo-Danish Fisheries Project at Tadri, motorisation of traditional fishing crafts and in addition, socio-economic programmes were also implemented for the welfare of fishermen. At the end of the first phase of Indo-Danish Fisheries Project at Tadri, 65 villages of Kumta and Ankola taluks have been benefited. A Brackish water FFDA at Karwar was established during May 1987 to develop brackish water areas for prawn farming. The scheme provides for imparting training to entrepreneurs and providing inputs and technical know-how about scientific prawn farming. The Agency has trained 65 prawn farmers and conducted survey of 300 ha of brackish water area upto 1990.

Add to Part I, page 763 :

Table 4.41
Statistics on Marine Fisheries during the last decade

- in M. tons.

<i>Sl. Name of the</i>	<i>1981-82</i>	<i>1982-83</i>	<i>1983-84</i>	<i>1984-85</i>	<i>1985-86</i>	<i>1987-88</i>	<i>1987-88</i>	<i>1990-91</i>
<i>No. species/fish</i>								
<i>1 2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
1. Sharks	1852	2137	1979	1629	1562	1614	1155	693
2. Rays skates	440	396	538	611	327	230	366	215
3. Oil sardines	72270	33882	23904	35946	65196	8158	34205	26757
4. White sardines	144	343	662	1038	873	107	114	386
5. Other sardines	-	-	-	-	-	-	3148	3258
6. Other clupids	3255	2847	5323	11649	10042	15878	12329	7822
7. Silver bar	277	136	266	197	99	53	149	154
8. Mackerel	18086	5003	3033	10161	13668	21305	12230	45766
9. Seer fish	1950	2084	2122	2703	1941	1670	1327	1220
10. Tuna	1034	596	936	3570	3268	2461	887	2925
11. Lactarius	1579	1671	1908	1390	1271	1286	1051	2330
12. Lady fish	246	241	263	153	134	183	205	267
13. Mulletts	205	315	378	468	157	194	160	151
14. Carangids	365	280	408	1065	1008	3612	1666	801
15. Pamfrets	615	1284	930	1143	2503	12200	1217	3532
16. Silver bellies	1762	2726	4382	4561	7146	9140	2627	2109
17. Garres	18	13	15	50	59	62	81	54
18. Scianids	2575	3289	4012	3413	4071	4364	3785	5863
19. Ribbon fish	1647	942	487	1336	2346	3988	2663	3421
20. Flat fish	185	302	457	841	1501	1060	508	362
21. Anchoviella	051	8914	9437	18083	6521	4459	4677	10981
22. Cat fish	5652	4320	3735	3661	4032	5756	2500	1555
23. Eels	-	-	-	-	-	-	-	37
24. Soles	795	713	625	9801	4348	4745	1980	6596
25. Jew fish	-	-	-	-	-	-	143	26
26. Miscellaneous	20769	22180	30509	44697	40554	52026	34057	6086
27. Prawns	5349	8564	7142	8749	6615	6420	5424	704
28. Crabs	455	147	407	362	431	720	410	1057
29. Shell fishes	801	730	433	779	993	1088	695	50775
State Total	145377	104066	104290	168046	200666	151779	129659	185706

Sources: Department of Fisheries.

Add to Part I page 764 :

Table No.4.42

Districtwise Inland Fish Production (in M.tons)

Sl. Districts	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1990-91
1. Bangalore (R)	7664	7858	6520	8014	7117	8144	3900	3496
2. Bangalore (U)	-	-	-	-	-	-	4296	3055
3. Belgaum	1706	1140	2063	934	2200	1985	2232	1923
4. Bellary	5131	5514	4730	5193	5259	5402	5331	8531
5. Bidar	478	464	454	92	74	232	174	821
6. Bijapur	560	545	737	387	438	231	425	643
7. Chikmagalur	1268	1164	1081	373	694	1192	748	679
8. Chitradurga	3162	3151	2829	3485	3738	3718	4151	3686
9. Dakshina Kannada	132	133	175	248	47	237	199	150
10. Dharwad	880	841	1227	970	1584	768	1484	1714
11. Gulbarga	1444	599	756	274	352	610	778	1830
12. Hassan	3195	2994	3937	3371	3027	2678	3430	4134
13. Kodagu	562	515	230	193	246	202	410	453
14. Kolar	2300	1903	2257	1801	1770	2176	2112	2223
15. Mandya	2397	3297	3586	2369	4357	3091	3574	3641
16. Mysore	5541	5023	3265	5271	4631	5124	5153	7559
17. Raichur	3873	2771	774	991	991	1484	1656	1410
18. Shimoga	2610	3198	3084	2634	1906	3198	2926	3010
19. Tumkur	3882	3190	2996	2423	3560	3497	3270	3051
20. Uttara Kannada	177	176	494	111	127	111	135	55
State Total	47862	44476	41203	39634	42118	44086	46384	52865

Source: Department of Fisheries

Add to part I page 753 after II para :

Number of fisheries co-operative societies/federations/Unions in Karnataka State as on 31.12.89

Sl.No. District	No.of Societies	Membership			Share capital (Rs.)	Active fishermen population
		Members	Government	Total		
1. Bangalore (R)	8	1815	25,010	67,230	92,240	10,122
2. Bangalore (U)	6	1130	25,118	15,000	40,118	1,706
3. Belgaum	17	1130	46,234	98,890	1,45,124	4,705
4. Bellary	12	1327	25,491	31,600	57,091	2,047
5. Bidar	9	335	11,428	60,000	71,428	724
6. Bijapur	16	2123	50,589	1,10,210	1,60,799	1,963
7. Chikmagalur	3	256	4,030	15,000	19,030	726
8. Chitradurga	8	937	28,7396	19,685	48,424	2,219
9. Dakshina Kannada	43	25,686	16,12,147	37,84,057	53,96,204	45,363
10. Dharwad	28	1685	61,875	99,250	1,61,125	4,615
11. Gulbarga	15	1194	27,655	49,703	77,358	2,778
12. Hassan	5	810	9,010	50,000	59,010	2,224
13. Kodagu	1	35	3,600	--	3,600	169
14. Kolar	8	1242	13,451	40,118	53,569	3,443
15. Mandya	12	3030	36,2878	39,246	75,524	5,846
16. Mysore	20	5077	87,152	2,02,458	2,89,610	9,599
17. Raichur	8	440	17,950	61,990	79,940	690
18. Shimoga	8	1901	34,973	67,473	1,02,446	2,785
19. Tumkur	8	2365	66,463	92,100	1,58,563	12,402
20. Uttara Kannada	-	--	--	--	--	27,794
Inland	7	359	15,425	--	15,425	
Marine	33	21,193	13,81,289	32,51,770	46,33,059	
Total	275	74,935	35,83,904	81,55,780	1,17,39,684	1,41,922

Source: Statistical bulletin of fisheries 1989-90

Add to part I Page 766:

Table No. 4.43

Disposal of Fish catch

in M. tons

Year	Total catch	Marketed	Cured	Reduction	Frozen	Canned	Used for miscellaneous purposes	Used for Manure
1987-88	1,29,659	75,619	23,58	5,707	63,61	2015	4,894	11,905
1988-89	147,307	80,349	21,614	8,947	8207	2395	8847	16,948
1989-90	1,86,138	1,01,758	35,035	10,002	5993	4,611	15,999	12,740
1990-91	1,85,706	89,693	48728	7,196	8,189	4016	12,759	15,125
1991-92	1,81,406	87,457	43,594	8,094	13264	5,141	2,881	20,975

Source: Quarterly Economic Review, Sept. 1992

Table No.4.44

Marine Fish Exported and Value

year	Quantity (M.tons)	Value (Rs.in lakh)
1982-83	3508	1,56,6.86
1983-84	2990	1,35,9.22
1984-85	2973	1,41,8.66
1985-86	3148	1,41,3.84
1986-87	2748	1,70,7.90
1987-88	2744	1,65,7.56

Source: Department of Fisheries.

Add to Part I, page 766:

Fishery Forecast

Satellite remote sensing data has potential for assisting in judicious harvesting, conservation and mapping of valuable fishery resources. Oceanography division of National Remote Sensing Agency, Hyderabad, is conducting studies on identification of potential fishing zone (PFZ). The PFZ maps are generated after the analysis of oceanographic features such as thermal boundaries (temperature gradients), fronts, eddies, surface currents and upwelling regions from composite maps of sea surface temperature and optically transferring these features on to naval hydrographic charts. Indian coast is divided into nine sectors (Karnataka coast is one of them) to have detailed information on fishery forecast. The PFZ maps possess the details such as longitude, latitude,

bathymetry, validity date etc. The PFZ maps are disseminated regularly twice a week on every Tuesday and Friday to all fishermen associations and Government organisations through facimile transmission (FAX). The PFZ information consisting of latitude and longitude positions, bearing in degrees, distance in km and depth in metres with reference to particular fishing centre are sent through telex/telephone/telegram. This will help small non-mechanised fishery crafts not possessing compass. The following is the list of fishery forecast mailing centres in Karnataka; Co-operative Fish Marketing Federation Ltd., of D.K. District, Mulihithlu, Mangalore; Deputy Director of Fisheries, Hoigebazar, Mangalore; The Karnataka Purse-Seine *Meenugarara Sangha*, Bunder, Mangalore; The President, Malpe Fisheries Association, Malpe; The President, Gangolli Fishermen Co-operative Society, Gangolli; Karnataka *Karavali Meenugarara Kriya Samiti*, Bunder Road, Gangolli; Purse Seine Boat Union, Bunder, Bhatkal; Purse Seine Boat Union, Tonka, Honnavar; Indo-Danish Fishery Project Tadri; Purse Seine Boat Union Baithkol, Karwar and Co-operative Fish Marketing Federation of U.K. District, Karwar.

Marine Fisheries

Karnataka has made significant progress in the development of marine fisheries. The major thrust has been introduction of a large number of shrimp trawlers, purse-seiners, mechanised gillnet boats and mechanised long-line boats. The motorisation of indigenous crafts has also acquired momentum since last few years. The continental shelf provide rich pelagic and demersal resources. It has been estimated that the total resources within the continental shelf are about 2,58,600 tonnes. The exclusive economic zone of the State has an area of about 87,000 sq km of which the present area of exploitation is only about 9,000 sq km. The mechanised fishing fleet comprises of 369 purse-seiners, 887 gillnetters, 56 long-liners, 1,938 shrimp trawlers and 599 others in 1990-91. The non-mechanised boats include 2,274 plank built boats, 4,526 dug-out canoes, 72 rampanies, 1,160 patable units and 3,828 others, the fishing gears operated along the coast are drag nets (967), gillnets (1385), trawl nets (4702), cast nets (6,546), short seiners (218), purse-seine nets (569) and others (7,700). There were 140 ice plants and 46 cold storages with a storage capacity of 1,618 and 1,415 MT respectively, 20 freezing plants capable of freezing about 123 tonnes per day with a frozen storage capacity of 2,054 tonnes and cold storage capacity of 1,183 tonnes. There were 8 canning plants and 14 fish meal or pulverizing plants in the State with a capacity of 24.75 and 180.5 Mt respectively,