

## CHAPTER IV

### AGRICULTURE AND IRRIGATION

**Land  
utilisation**

**T**HE total geographical area of the district, according to professional survey, is 20,27,285 acres, out of which the extent of land put to agricultural use during the years 1956-57 and 1965-66 was 6,67,382 and 6,31,011 acres, respectively, forming roughly one-third of the total land area. From ancient days, the district has occupied a pre-eminent place in dry cultivation. Agricultural practices in the area largely conform to a traditional type depending on the rains. Nature has not been singularly kind to this district. Scarcity conditions have often ravaged the district, because of periodical failure of rains. The following tables give the cultivable and uncultivable areas in the district during 1956-57 and 1965-66 :—

#### 1956-57

<i>Taluk</i>	<b>Cultivable area in acres</b>				
	<i>Total area</i>	<i>Cultivated area</i>	<i>Forests</i>	<i>Pastures</i>	<i>Cultivable waste</i>
1	2	3	4	5	6
Kolar ..	1,91,908	62,696	11,524	42,280	1,803
Mulbagal ..	2,09,382	69,616	5,053	50,933	6,216
Srinivasapur ..	2,07,853	66,003	21,023	72,702	1,976
Chintamani ..	2,14,232	78,161	5,451	78,770	3,234
Sidlaghatta ..	1,67,652	46,738	3,502	61,152	3,015
Bagepalli ..	2,32,831	73,968	45,576	48,286	10,346
Gudibanda ..	53,485	21,951	4,748	11,520	3,770
Gauribidanur ..	2,19,395	89,880	13,118	44,352	6,230
Chikballapur ..	1,58,341	36,473	43,710	16,016	9,269
Malur ..	1,59,148	61,973	3,796	35,278	1,525
Bangarpet ..	2,13,058	69,923	6,700	54,255	1,532
<b>Total ..</b>	<b>20,27,285</b>	<b>6,67,382</b>	<b>1,64,201</b>	<b>5,15,544</b>	<b>48,916</b>

<i>Taluk</i>	<b>Uncultivable area in acres</b>			
	<i>Current fallows</i>	<i>Other fallow land</i>	<i>Land put to non-agricultural use</i>	<i>Barren land</i>
1	2	3	4	5
Kolar ..	29,534	1,087	13,639	3,446
Mulbagal ..	16,161	..	26,687	7,834
Srinivasapur ..	5,390	1,210	16,381	11,293
Chiptamani ..	1,152	10,121	2,381	14,276
Sidlaghatta ..	10,120	3,462	4,165	9,730
Bagepalli ..	13,296	350	15,110*	15,408
Gudibanda ..	2,644	510	3,168	3,506
Gauribidanur ..	11,240	3,382	27,216	6,339
Chikballapur ..	4,625	373	9,780	12,333
Malur ..	7,201	3,511	9,584	1,703
Bangarpet ..	12,998	1,840	15,912	14,577
Total ..	1,14,361	25,846	1,44,023	1,00,445

## 1965-66

<i>Taluk</i>	<b>Cultivable area in acres</b>				
	<i>Total area</i>	<i>Cultivated area</i>	<i>Forests</i>	<i>Pastures</i>	<i>Cultivable waste</i>
1	2	3	4	5	6
Kolar ..	1,91,908	57,015	11,524	42,276	1,784
Mulbagal ..	2,09,332	66,962	4,614	50,013	6,028
Srinivasapur ..	2,07,853	55,703	21,023	69,838	2,716
Chintamani ..	2,14,232	59,802	5,450	90,647	2,695
Sidlaghatta ..	1,67,652	37,333	3,502	61,050	1,984
Bagepalli ..	2,32,831	78,319	45,576	46,216	5,902
Gudibanda ..	53,485	19,702	4,150	11,134	1,068
Gauribidanur ..	2,19,395	70,534	13,118	38,023	5,618
Chikballapur ..	1,58,341	44,645	48,710	14,546	3,152
Malur ..	1,59,148	62,789	3,796	36,262	1,126
Bangarpet ..	2,13,058	77,207	6,700	45,698	1,432
Total ..	20,27,285	6,31,011	1,68,163	5,05,703	33,505

<i>Taluk</i>	Un-cultivable area in acres			
	<i>Current fallows</i>	<i>Other fallow land</i>	<i>Land put to non-agricultural use</i>	<i>Barren land</i>
1	2	3	4	5
Kolar ..	28,692	6,211	13,645	3,440
Mulbagal ..	13,178	1,462	26,302	7,723
Srinivaspur ..	13,719	2,622	16,826	11,283
Chintamani ..	19,168	3,365	2,745	18,276
Sidlaghatta ..	19,942	2,952	4,185	9,730
Bagepalli ..	10,916	447	16,374	18,725
Gudibanda ..	9,947	573	3,132	3,500
Gauribidanur ..	19,965	21,380	26,542	6,339
Chikballapur ..	4,563	450	9,780	12,333
Malur ..	3,970	3,698	9,593	1,700
Bangarpet ..	13,928	990	15,912	14,577
Total ..	1,57,988	44,150	1,45,036	1,07,626

From a comparison of the two tables given above, it is seen that in the year 1965-66, there was an overall decrease in the cultivated area to the extent of 36,371 acres. But, while the cultivated area in some taluks had shown a decrease, in other taluks there was an increase—in a few cases, a marked increase. For instance, in the Bagepalli taluk, the cultivated area during 1956-57 was 73,968 acres, but during 1965-66, this acreage had increased to 78,319 acres. Similarly, Malur taluk had 61,973 acres under farming during 1956-57 and this had increased to 62,789 acres during 1965-66. Same was the case with Bangarpet where the cultivated area increased from 69,923 acres to 77,207 acres from 1956-57 to 1965-66. Chikballapur taluk also showed a definite improvement. The cultivable area in 1956-57 in respect of this taluk was 36,473 acres and this had increased to 44,645 acres in 1965-66.

But the other taluks, namely, Kolar, Mulbagal, Srinivaspur, Chintamani, Sidlaghatta, Gudibanda and Gauribidanur, had shown a decrease. In the Chintamani taluk, the decrease was marked: from 78,161 acres in 1956-57, the cultivable area had come down to 59,802 acres in 1965-66. The ratio of cultivable area to the total area of the taluk varies from about one-fourth in some cases to about one-third in others. The cultivable waste available in these taluks is not much and even if all the waste is made fit for farming, it cannot be a very significant addition to the arable acreage. The figures as shown in the tables give a pride of place to Bagepalli taluk, where the land area is largest, with a fairly large cultivated portion. The total area of this

taluk is 2,32,831 acres, out of which 78,319 acres have been utilised for agricultural pursuits. The smallest taluk is Gudibanda, where 19,702 acres have been put to agricultural use out of a total land area of 53,485 acres.

Seasonal conditions have been the main factor causing fluctuation in the acreages under cultivation. The periodical drought and the recurring scarcity conditions reduce the cultivated areas in such years. The cultivators have now realised that they can get more from the land if they adopt scientific methods. In order to reap full benefits, many land-owners have attempted to concentrate more on better fields in their possession, which may mean leaving out very inferior portions of land at least for the time being. This preferring of intensification to diffusion in some cases would contribute to show a decrease in the overall acreage under cultivation. The extent of barren land and the land put to non-agricultural use during the years have not shown any significant variations.

The district, which is situated half way between the eastern **Agricultural** and western coasts, comes under the influence of both the south-**meteorology** west and north-east monsoons and the average rainfall in the district is about 730.5 mm or 28.76 inches. During the monsoons, the rainfall is not evenly distributed and instances are not wanting where, in some taluks, there was a total absence of rainfall for the sowing operations. This results in some variations in the sowings, about 10 to 20 per cent of the cultivated land at times remaining unsown due to absence of rains. The rainfall being uncertain, proper grain formation in the earhead stage is sometimes stultified resulting in crop failures. All this makes the total expected yield poor. The Kolar District Handbook published in August 1914 has this to say about the rainfall in relation to agriculture in the district: "The rainfall in the district is liable to considerable fluctuations. It is often meagre and unseasonable and years of anxiety both to Government and the people are not of uncommon occurrence". This pinpointed the uncertainty of adequate production of foodgrains. The belief that agriculture is a gamble on the rains in the district is not altogether untrue.

The south-west monsoon season beginning from June and ending in October gives the district about 69 per cent of the total annual rainfall. The month of September is reckoned as the heaviest rainfall month. The variations in the rainfall from year to year are fairly large. In a few years it is abnormal and in many years it is sub-normal. According to particulars furnished by the Indian Meteorological Department, it is seen that in a period of 50 years (1901 to 1950), 11 years went with less than normal rainfall in this district. This sub-normality is so marked

that in those years there was 80 per cent less of the normal rainfall. With all this, the average of the district as a whole remained at 730.5 mm or 28.76 inches. (See also Chapter I).

#### Agricultural seasons

The agricultural seasons in the district follow a traditional line comprised within the periods of the two monsoons for the bulk of the crops. Now the seasons are reckoned as *Kharif* or *Mungaru* and *Rabi* or *Hingaru*. The weather in the district is at no time of the year so cold as to preclude agricultural operations altogether and provided there is a supply of water for irrigation, crops can be raised all the year round. As a matter of fact, under well-irrigation and under the larger tanks, the lands are found to be under some crop or other throughout the year. In the old days, usually the following seasons were reckoned as a matter of agricultural practice :—

(1) The *Kar* or early *Mungaru* beginning about the month of April or May.

(2) The *Hain* season or later *Mungaru* beginning about the month of July.

(3) The *Hingaru* commencing in September or October.

The terms, *Kar*, *Hain*, *Mungaru* and *Hingaru* have been used in relation to the cultivation of dry crops. In Kolar, it has not been customary to rely on the *Kar* crops as the early *Mungaru* rains are often uncertain. The *Hain* or the later *Mungaru* beginning in the month of July is the accepted agricultural season. In the present-day agricultural practice, the two prominent seasons are the *Mungaru* and *Hingaru*, *Mungaru* being the *Kharif* season beginning from June and ending in December. The *Rabi* or *Hingaru* season begins in December and continues till April. There are separate seasons for growing paddy called the autumn, winter and summer.

In general, it may be stated that the agricultural year in the district begins in April. Traditionally, the seasons are associated with 27 rainfall periods called after the lunar asterisms, each of about a fortnight's duration. Each such lunar asterism is further divided into four *Padas*. According to this reckoning, the rains begin in the middle of April with the emergence of *Ashwini* lunar asterism and end with *Revati* on April 13 in the following year. The cultivators in the district rely, for timing their agricultural operations, on these lunar asterisms with their four *Padas*. By practice they know roughly the quantum of rainfall expected in particular periods in relation to their crops. Some of the more important feasts which are observed by the cultivators are closely associated with the agricultural operations.

The rainfall being scanty, the forest area is small and **Forestry** restricted; the percentage of forests is as low as ten in the district. Maintenance of forests in good condition to the optimum extent possible is essential especially for a district like Kolar. Apart from producing timber, firewood, fodder, pasturage and materials required for agricultural implements, the indirect benefits conferred by good forests by way of moisture conservation in the soil, prevention of soil erosion, improvement of soil fertility by the addition of organic manure, reduction of flood havocs, maintenance of regular flow of water in the streams and regulation of rainfall and climate are seldom realised, though the benefits are fully enjoyed. These indirect benefits help agriculture to a considerable extent. Besides assisting agriculture, forests can support several industries by way of supplying raw materials required by them. The low percentage of forests is a drawback for rapid economic development of the district.

The principal forest products are firewood, sandalwood and minor forest produce. The minor forest products are tanning bark, myrobalans, tamarind, *sithaphal* fruits, *maradi* seeds, *honge* leaves and seeds and tupra leaves. Exploitation of forest produce is now done on a scientific basis. The forests are worked under sanctioned working plans, basing the management of forests on the principle of securing sustained yields. Intensive efforts are being made for development of the forest wealth with the financial assistance given by the Central Government under the successive Five-Year Plans. Unlike other crops, forest crops are long-term crops. What is sown or planted cannot be harvested in the immediate future. More often the benefits of a forest crop raised by one generation are enjoyed by the next generation. (See also Chapter I).

### IRRIGATION

The scanty of rainfall and the uncertainty of a well-distributed rainfall highlight the importance of irrigation for agriculture. Periodical rainfall, no doubt, is the best source for the soil moisture. The Kolar district, being in the moderate rainfall area, is largely used to dry farming practices, ragi being the major crop. There are no perennial rivers nor big water storages. There are 535 major tanks and about 3,300 minor tanks in the district. The waters from rivers, tanks and irrigation wells are used for irrigating wet crops like paddy and sugarcane. Tanks and wells are the chief sources of irrigation in the district. The following table indicates the extent of

acreage under irrigation, as supplied by the District Statistical Office, for the year 1965-66 :—

<i>Taluk</i>	<i>Government Canals</i>	<i>Private Canals</i>	<i>Tanks</i>	<i>Wells</i>	<i>Other sources</i>	
Kolar	..	..	7,623	1,312	..	
Mulbagal	..	..	10,804	2,942	..	
Srinivasapur	..	..	5,230	2,292	..	
Chintamani	..	..	3,210	2,000	..	
Sidlaghatta	..	..	8,950	6,310	322	
Bagepalli	..	250	6,741	3,347	..	
Gudibanda	..	..	1,366	421	..	
Gauribidanur	..	..	533	7,235	5,660	
Chikballapur	..	..	..	826	5,250	20
Malur	..	..	..	5,563	2,400	..
Bangarpet	..	..	..	6,563	2,170	..
Total	..	250	533	64,111	34,104	342

Out of a total cultivated area of 6,31,011 acres in 1965-66, the irrigated area as per the above table came to 99,340 acres. That means, actually 5,31,671 acres depended entirely on the two monsoons, *viz.*, south-west and north-east. Out of the total irrigated area, the tanks alone account for a little less than two-thirds and the wells for about one-third. During the First and Second Plan periods, about 20 per cent of the tanks were improved or repaired and the balance of works were taken up for execution in the Third Plan period. During the first two Plans, a little more than Rs. 133 lakhs were spent on these irrigation works in the district, while a further financial outlay of Rs. 45 lakhs was made under the Third Plan for the same purpose. Desilting-*cum*-reclamation, restoration, construction of new tanks and pick-ups and opening of feeder channels were undertaken in the district by the Public Works Department.

#### Irrigation Wells

Irrigation wells in the district consist of *yathas*, step-wells and draw-wells. According to the annual administration report of the District Agricultural Office (1966-67), there were 26,000 small and big irrigation wells of different categories used for lift-irrigation in the district. The cost of constructing these wells varied from Rs. 3,000 to Rs. 10,000. Each well is able to irrigate, on an average, half to one acre. Some big wells have a command of 2 to 3 acres. For sinking irrigation wells, subsidies and loans to the extent of Rs. 8,54,400 were given during the first two Plans. Besides, a special programme of sinking 2,000 irrigation wells with Central assistance was also continued during the Third Plan. The over-all expenditure in

this respect was nearly Rs. 40 lakhs. In addition, an allocation of Rs. 21 lakhs was also made for digging new irrigation wells, for a well-boring scheme and for supply of pump-sets under the Third Plan.

The tank system is well developed in this district which has afforded immense facilities for constructing tanks because of the peculiar river system in the district and the configuration of the countryside. Many of the tanks are found in a series, one emptying into the other. The Palar series is particularly noteworthy, as a considerable portion of the water-spread is found in the basin of this river. The waters of this river, which run through the central and eastern parts of the district, have been intercepted to construct a series of tanks, one above the other, and a few miles apart from one another. Though there are isolated tanks in certain areas, a large number are constructed on a connected system of streams and their feeders which are many in Kolar district. Many of the tanks get silted up frequently, but even then they play a prominent role in the agricultural sphere.

As already stated, there are no perennial rivers flowing through the district. The rivers Palar, Arkavathi, Chitravathi, Kushavathi, North Pennar, Papaghi, Vrishabhavathi, Kumudavathi, South Pennar and Markandeya are small and flow only during monsoons. Important tanks are constructed along these rivers. The following table gives the names of some of the important tanks constructed across rivers with the extent of the atchkat area and the storage capacity of each tank :—

<i>Name of tank</i>	<i>Across river</i>	<i>Atchkat in acres</i>	<i>Storage capacity in units</i>
Ramasagara	.. Palar	.. 1,261	1,730
Markandeya	.. Markandeya	.. 847	807
Kamasamudra	.. Vrishabhavathi	.. 600	649
Bethamangala	.. Palar	.. Water supply to K.G.F.	1,216
Somambudhi Agrahara	.. Palar	.. 888	778
Jannaghatta	.. Palar	.. 455	217
Amani Byrasagara	.. Kushavathi	.. 455	212
Srinivasa Sagara	.. North Pennar	.. 1,200	127
Ramasamudra	.. Chitravathi	.. 859	1,207
Amani Bhadrarakere	.. South Pennar	.. 1,011	1,225
Venkatesh Sagara	.. Papaghi	.. 191	517
Mudavadi Doddakere	.. Palar	.. 943	513
Chillapalli Amanikere	.. Palar	.. 470	598
Reddihalli Amanikere	.. Chitravathi	.. 243	199



A brief account of the more important of these tanks may not be out of place, considering the vital role these tanks play in the irrigational sphere in the district.

The *Ramasagara* tank, situated within a few furlongs of Ramasagara village in Bangarpet taluk, is a reservoir constructed across the Palar river and is the last tank in the Palar series. The tank dates back to the time of the Chola rule. Formerly it was known as Bukkasagara. It acquired its present name because of its proximity to Ramasagara village. Previously, the capacity of this tank was 2,028 units, the atchkat being 1,091 acres. But during the disastrous floods of 1903, the bund was overtopped suffering three heavy breaches. It was restored in 1904. This tank has an independent catchment area of 8.9 square miles and a combined catchment of 803 square miles. The present capacity of the tank is 1,730 units. The atchkat now works out to 1,261 acres. The tank has four channels, the first running for a length of  $1\frac{3}{4}$  miles, commanding an atchkat of 64 acres. The second channel is 6 miles long, commanding an atchkat of 745 acres. The third channel is only a distributary channel, commanding an atchkat of 39 acres. The last has a total length of 5 miles and 5 furlongs with an atchkat of 413 acres.

The *Bethamangala tank* is one of the very old tanks constructed by the Chola rulers, across the Palar river, the last but one in the series, with a capacity of 1,216 units having an irrigation potential of 1,300 acres. Since the year 1903, the tank has been reserved for supplying water to the Kolar Gold Fields area.

The *Markandeya dam* is a masonry dam constructed across the Markandeya stream. The construction of the dam was started in 1939 and completed in 1944, at a cost of about Rs. 4,34,000. The reservoir is situated about eleven miles from Bangarpet with a storage capacity of 807 units and an atchkat area of 847 acres. The height of the dam above the foundation is 61 feet and the length is 1,050 feet. This tank has an irrigation canal running to a length of four miles.

The *Kamasamudra tank* is a newly constructed tank across the Vrishabhavathi river, at an estimated cost of Rs. 2 $\frac{1}{2}$  lakhs. There is an earthen bund protected with size-stone revetment in front. This tank has a capacity of 649 units with an atchkat of 600 acres with a canal running to a length of six miles.

The *Somambudhi Agrahara tank* is a major tank constructed across the Palar river in Kolar taluk. It is on record that this tank was also constructed during the Chola period. In 1903, there was a serious breach at the waste-weir portion. After

this mishap, the waste-weir was reconstructed. This tank has an independent catchment area of 9.9 square miles with a net supply capacity of 1,398 units. The water-spread area is 316 acres. It has an atchkat of 888 acres and the two channels of the tank are  $3\frac{1}{2}$  miles in length.

The *Jannaghatta tank* is a major tank constructed across the Palar river, discharging across the Bangalore—Chikballapur—Bangarpet narrow gauge railway line. It has got an independent catchment area of about 10 square miles with a net supply of 409 units facilitating an atchkat of 455 acres.

The *Amani Byrasagara tank* is constructed across the river Kushavathi in Gudibanda taluk and owes its existence to a Paleyagar, Byra Nayaka by name, who lived some 200 years ago. It has a storage capacity of 600 units with an atchkat of 1,200 acres. There are two irrigation channels on the right and left flanks, the right bank channel running to a length of  $1\frac{1}{2}$  miles and the left bank channel to a length of 4 miles, feeding the entire atchkat area.

The *Srinivasa Sagara tank* is a major tank constructed across the river North Pennar in Chikballapur taluk. It is said that the Royal Engineers constructed this tank in 1893. Due to inflow of heavy silt, the original storage capacity of 600 units has been reduced to 127 units with an atchkat area of only 367 acres. The Irrigation and Public Health Wing of the Public Works Department have restored the lost storage capacity by raising the tank's weir by two feet and constructing a silt arresting reservoir higher up across the river near Jakkalnadagu at a total cost of Rs.  $15\frac{1}{2}$  lakhs. A new balancing tank higher up Srinivasa Sagara across the North Pennar river was completed at a cost of Rs. 15 lakhs during 1964-65.

The *Ramasamudra tank* in Chikballapur taluk is a major tank constructed across the Chitravathi river during the latter part of the 18th century. It has got a storage capacity of 1,072 units with an atchkat of 859 acres. There are two irrigation canals feeding the entire atchkat.

The *Amani Bhadrakere* is also a major tank constructed across the river South Pennar in Sidlaghatta taluk with an atchkat of 1,053 acres and a storage capacity of 1,225 units. The tank commands atchkats both in Sidlaghatta taluk of Kolar district and Devanahalli taluk of Bangalore district.

Varied appliances are used for baling out water from the irrigation wells. In the old days, the agriculturists of the district were depending only on manual and bullock power for

Irrigation  
pump-sets

the purpose. Many agriculturists have now fitted electric pumps, which, in the year 1965-66, numbered 3,611 in the district. Some have recourse to oil engine pumps, but the number of these pumps is small when compared to electric pumps. In 1965-66, such oil engine pumps in use for irrigation purposes were 510 in number. Barring these, the remaining large number of wells in the district are still handled by manual or bullock power. The familiar *picota*, which is a long lever mounted on a central vertical fulcrum, is largely in use in Gauribidanur taluk. There are nearly 3,500 of these in use in this taluk which is noted for sugar-cane cultivation. The *picota* lever is suitably weighted at one end and a water bucket is attached to the other end. The weight at the rear-end is heavy enough to be of help to the man to raise the full bucket. In wells of very low lift, the lever is fairly broad, with steps cut on it, along which men can walk up and down. The buckets used in *picotas* have a capacity of about three gallons.

The other variety used in drawing water from the wells is the *kapile* lift, which is specially adapted for bullock power. The bucket, which is used for baling water, is lowered and raised by a pair of bullocks moving up and down a steep ramp, pulling the bucket by means of a rope passing over an elevated pulley. The bucket is made out of leather and is circular in shape with a wide and long leather hose stitched on to the bottom of the bucket. As the bucket enters the water, both the bucket and the hose fill. They are pulled up by two ropes, one tied to the mouth of the bucket and the other to the tail end of the hose in such a manner that the hose bends like a 'U' and the bucket and the hose come up full. These buckets hold from 30 to 50 gallons of water. Persian wheels are also in use in a few places in the district. This method is not different from the usual *kapile* lift. The *kapile* type is adapted to a circular motion of the bullocks on the level along a circular track in which the bucket rope winds and unwinds round a large wooden drum. Though there have been tube wells in urban areas for drinking water supply, there had been none for irrigation purposes. The Third Plan made a beginning in this direction and a financial outlay of Rs. 2 lakhs was made, with a physical target of sinking a hundred bore-wells in the district.

*Water-Table.*—The water level varies in different parts of the district, the average depth being 25 feet. It is the lowest in parts of Gauribidanur taluk, where water is found in a depth of only 20 feet. In other taluks, the depth varies from 40 to 60 feet.

**Soil  
Conservation**

Soil erosion in the district is an acute problem. There is a considerable erosion of soil and loss of moisture through run-off,

owing, mainly, to the peculiar nature of the rainfall and the soil. Heavy erosion had become rampant all over the district. Careful and systematic measures have been devised to reduce the heavy erosion. Under the scheme of soil conservation and reclamation of eroded lands, several measures have been undertaken. Bunds have been erected across the slopes and the growth of grass has been encouraged, to a large extent, wherever possible. The contour bunds constructed on catchment basis, at suitable distances from ridge to valley, not only save soil from erosion, but also conserve moisture received by the soil during the monsoon season. For bunding ten thousand acres and for popularising dry farming in the bunded areas, Rs. 6.56 lakhs were provided under the Third Plan. The Agricultural Officers are giving timely technical advice for terracing and levelling and for practising contour cultivation. Loans are given for reclaiming waste lands. Bulldozer and tractor services have been made available to the cultivators. In order to help reclaim both the waste lands and the lands affected by alkalinity and acidity, a subsidy of Rs. 50 per acre was given. The Development Blocks have also given increased loan amounts for land improvement. Afforestation work is also being carried on in some parts of the district by recourse to community work. The target for reclamation for the year 1966-67 was 400 acres and, out of this, 237 acres were reclaimed. The area that had been bunded upto 1967 was 13,962 acres.

The soil of Kolar district is mainly divided into three types, **Soil types** viz., red, clay loam and laterite. Some black-soil patches are seen here and there. The red loam region extends from south to north comprising Chikballapur, major parts of Sidlaghatta, Kolar and Malur and some parts of Bangarpet and Mulbagal taluks. The water-table in this red loam region is between 40 to 50 feet deep. The red loam soil is very easy for cultivation purposes and responds to good manure and other treatments. This soil is particularly suited for growing vegetable crops like potatoes, onions, cabbages and radishes.

*Gravelly soil*: The gravelly soil region is found in parts of Bangarpet, Kolar, Srinivasapur, Gudibanda and Chintamani taluks. The water-table in these types of soils is between 50 to 60 feet deep. Groundnut, ragi and pulses are largely grown in these tracts.

*Clay loam soil*: Clay loam soil is found in the taluks of Gauribidanur, Chikballapur and parts of Sidlaghatta and Bagepalli. These soils have good moisture-retentive capacity and allow deep furrowing. This soil is suitable for raising paddy, sugarcane, chillies and tobacco.

Patches of laterite soil are found here and there in Sidlaghatta taluk. The soil-test values for available nutrients in the soils are determined by a variety of factors, such as the type of soil, rainfall, facilities for irrigation, systems of cultivation, manuring and rotation. The soil in Kolar district has a normal soil reaction and here and there tends towards alkalinity, probably due to the development of alkalinity under irrigation.

### AGRICULTURE

#### Principal Crops

The following statement gives acreages under various important crops in the district for the years 1959-60 and 1965-66 :—

Crop	Acreage	
	1959-60	1965-66
Ragi	3,19,339	3,50,490
Paddy	44,363	79,200
Jowar	16,145	4,954
Bajra	975	17,587
Pulses	47,740	66,054
Groundnut	58,709	89,200
Sugarcane	12,444	13,000
Potato	6,696	5,000
Tobacco	4,297	6,582

For particulars of acreages under different crops and their production for the year 1966-67, please see Table 2 appended at the end of this chapter.

#### Ragi

*Ragi (Eleusine coracana)* is the most extensively grown crop in the district. It is the staple foodgrain of the bulk of the population. It is grown both as a dry crop and also under irrigation. The cultivation of irrigated ragi is confined to certain areas, mostly under well irrigation. The ragi crop is raised practically on all kinds of soils. The deep red fertile loam, which forms the predominant type in the district, is the most congenial soil for this crop. On good soils, well manured and helped by a good rainfall, it gives very fair yields, but even with a poor rainfall, it makes a moderate growth giving a fair yield. The crop is very hardy and drought-resisting. Even under unfavourable conditions, the crop maintains its growth. It is remarkably free from fungus or insect attacks. There is not much rotation of crops followed in the case of ragi, which is grown year after year, by and large, in the same field. Where a cultivator's holding is large and a variety of crops could be grown, cultivation of a rough kind of alternate crop is practised.

In almost all the taluks of the district, a practice is in vogue where a mixed or subsidiary crop of *avare* (*Dolichos lablab*) is grown along with ragi. It is said by agriculturists that this inter-culturing of a leguminous crop neutralises in some degree the evil effects of a succession of ragi crops on the same field.

Ragi is grown in all the eleven taluks of the district. Where rotation is prevalent in the raising of this crop, in the first year the cultivators sow gingelly and jowar for fodder followed by horsegram. *Save* and *baragu* may also be raised in place of horsegram if the former two are not already grown as first crop. In the second year, ragi is grown. This rough rotation is confined only to large holdings. The following figures give the acreage-extent of ragi cultivation in the eleven taluks of the district for the years 1959-60 and 1965-66 :—

<i>Taluk</i>	<i>Acreage</i>	
	1959-60	1965-66
Kolar ..	38,150	54,390
Mulbagal ..	35,788	28,000
Chintamani ..	29,550	37,500
Srinivaspur ..	31,496	27,500
Sidlaghatta ..	23,500	26,000
Bagepalli ..	12,532	28,200
Gudibanda ..	8,500	10,500
Gauribidanur ..	29,560	34,200
Chikballapur ..	17,299	26,000
Malur ..	50,000	33,200
Bangarpet ..	43,000	45,000
Total ..	3,19,375	3,50,490

In the district, the ragi-sowing season is generally about the middle or early part of July. If there is a paucity of rains, the sowing operations are put off till about the middle of August. The methods of cultivation of ragi adopted in different taluks are well designed to conserve soil-moisture so as to reduce, as far as possible, the risks of crop failure. For example, the practice of ploughing the dry fields immediately after harvest is followed as a rule in areas where the crops are harvested early. By employing this method, not only the soil moisture is conserved, but the soil is left in such a condition as to soak up, without loss, by surface drainage. Where the soil is too hard for the plough, the heavy bladed harrow is used. Ploughing and tilling are repeated several times to obtain a very good tilth before the

**Cultivation  
methods**

actual sowing. The ragi seeds are often sown in rows for facilitating a good inter-culture. A thorough weed removal is secured in order to reduce the drain on the soil-moisture. Often the ragi seeds are sown mixed with manure so that the seedlings obtain a good start. If the soil is loose and blowing, then it is firmed up or slightly compacted after sowing so as to bring up the moisture to the germinating seeds, by driving a herd of sheep over the field. Crust formation on the sprouting seed is broken up and loss of moisture is thus prevented.

As ragi is the main food crop, the ragi fields are manured to the full capacity, which is further supplemented in various ways, such as, by the supply of silt from tanks, penning of sheep and the like. The amount of cattle manure applied may vary from 15 to 20 cart loads per acre, which are further supplemented by another 10 to 15 cart loads of silt or red earth. Cattle manure is applied not only when the soil is being prepared, but also, in certain areas, it is mixed with the seed as already stated and applied in furrows at the sowing time. Artificial manure and oil-cakes are also applied at a later stage. The use of modern fertilisers is hindered by the consideration that in the case of dry land ragi, the rainfall may turn out to be poor and render this costly manuring fruitless. In view of the very low organic matter in the ragi soils and the great need for enhancing it so as to make the soils more receptive and retentive of moisture, the question of growing a green manure crop and ploughing it in has been studied and it has been found that it is possible to grow a sufficient quantity of some green manure crop like sunnhemp or one of the pulse crops, if these can be sown early enough.

**High seed-rate**

Ragi is sown broadcast or in rows through seed drills or in shallow furrows or may be transplanted. By far the commonest method in the district is to sow the seeds in rows through drills or in shallow furrows. After the sowing is completed, the field is worked with light-bladed harrow which covers the seed. The field is also worked lengthwise and breadthwise by furrow-making drills. The seed rate for ragi is very high. About 20 to 25 lbs. of seeds are sown per acre. This large quantity is used to allow for the unduly large thinning which takes place during inter-culturing and also to guard against non-germination, owing to lack of moisture in the soil. For the same reason, *avare* and *togari* are also sown thick at the rate of about 10 to 15 lbs. per acre. Ragi seed sprouts readily without any dormant period. In fact, grains are sometimes seen to sprout even in the earheads if harvest is delayed and should a heavy rain fall at the time of harvesting. Ragi is also sometimes transplanted. Much of the *hain* season ragi is raised by this method. Seedlings are raised in special nurseries for transplanting.

The main-season ragi grows from the beginning of October and is fully in earheads in about a fortnight thereafter. The earheads mature and become ready for harvest in about forty days from that stage and the actual harvest begins from about the middle of November and may continue upto the middle of December depending upon the variety and the month when the crop had been sown. The ragi crop usually takes about 5 to 5½ months to mature. Harvest is done by means of ordinary sickles and the plants are cut close to the ground so as not to waste any of the straw, which is useful. Ragi remains in the stack for a month or two until the dewy season is over and the weather warms up about the middle of February. By this time, all the mixed crops are also harvested and the threshing begins.

Threshing is done in one of three ways, *viz.*, by beating out the grains with sticks, by treading out the grains under the feet of oxen, which are driven in a team round and round over the sheaves spread on the ground, or by working a stone roller over the sheaves. The threshing of ragi is more difficult than that of paddy or jowar as the grains are held much more firmly in the glumes and require pressure. Ragi is preserved in ordinary earthen-ware receptacles like other grains, and to a much larger extent, under ground in large pits excavated in suitable places. Ragi, for food, is ground into flour and then used—cooked either as a pudding or as a porridge. It has been found that the protein of ragi is of the type known as biologically complete as in the case of milk.

The estimated average yield of ragi is about four quintals per acre. During summer, the crop is grown under lift irrigation by which the yields are higher, being about 8 quintals per acre. The usual varieties common in the district are Co-1, K-1, H-22, Aruna, Kaveri and Annapurna.

*Paddy (Oryza sativa)* is also grown in all the taluks of the **Paddy** district. It is the most important crop next to ragi and is mainly grown under tank and well irrigation. When rains fail, *Punaji* or *Barabatta*, *i.e.*, dry cultivation of paddy, is practised under the atchkat of tanks. The paddy strains used in the district are: S-661, S-1092, SR-26-B, CEB-24, S-705, CH-45, CH-2, S-199 and S-317. Nearly 90 per cent of the paddy-growing area is covered with improved strains. In taluks of Gauribidanur and Sidlaghatta, CH-45 and CH-2 strains have become popular varieties. In the taluk of Chikballapur and parts of Sidlaghatta and Gauribidanur taluks, S-661, S-1092, SR-26-B and S-317 are the popular strains.



The notable S-661 variety of paddy is grown in a large area of Gauribidanur and Bagepalli taluks. This strain is, however, easily susceptible to a blast disease locally called *Benki-roga*. The strains S-705, S-199 and S-317 are cultivated in Gauribidanur, Sidlaghatta, Bagepalli, Chikballapur, Kolar and Chintamani taluks. The S-1092 and SR-26-B strains are popular in Gauribidanur, Sidlaghatta and Srinivaspur taluks. The H-294 strain, also grouped under the *Dodda Baira* variety, is also grown in several taluks because of its drought-resistance power. The SR-26-B is a new strain of paddy recently introduced in Sidlaghatta, Chintamani and Chikballapur, and these have come up very well and the cultivators have taken to it readily. In the taluks of Mulbagal, Sidlaghatta and Malur, the CH-45 and CH-2 strains, which are short duration varieties, are grown under the atchkats of minor tanks.

Cultivation of dry land paddy is practised particularly in Sidlaghatta taluk. The traditional variety grown under *Punaji* cultivation is known as *Dodda Baira*. The cultivation methods employed in the area are still largely traditional. Under dry cultivation, the land is ploughed twice or thrice till about June. When the field is moist after a rain, the seed grains are sown broadcast or harrowed with the wooden *halube*. However, not much attention is paid during the next two months and then the plants are fed with water by irrigation. After the weeds are removed from the fields by hand, water is let in profusely as in the case of other paddy fields. The *Punaji* paddy is a short-duration crop and comes up well in the *maidan* areas.

#### Transplantation

The popular method of growing paddy is by transplanting seedlings from a seed-bed. The paddy land is ploughed soon after the last harvest. Water is then let in and the green manure crop is trampled in. The field is ploughed once again. The bunds are trimmed and the puddle is levelled. Into this puddle, seedlings, about 30 to 45 days old, are transplanted in bunches containing from 4 to 15 plants, at intervals of about a span. Water is let in slowly till the yellow of the transplanted seedlings changes into deep green. The field is kept continuously irrigated till about 10 days prior to harvesting, when water letting is stopped. The crop is then harvested and threshed straightaway.

The average yield of paddy in the district, as per district agricultural reports, is about 15 to 20 quintals per acre under the ordinary method.

The following table gives the extent of paddy cultivation in the eleven taluks of the district as in 1959-60 and 1965-66 :—

Taluk	Acreage	
	1959-60	1965-66
Kolar	4,200	10,300
Mulbagal	11,115	12,000
Srinivasapur	5,700	11,000
Chintamani	3,656	9,500
Sidlaghatta	3,500	2,200
Bagepalli	1,125	4,000
Gudibanda	2,960	3,000
Gauribidanur	2,945	9,500
Chikballapur	1,192	2,500
Malur	4,500	5,200
Bangarpet	7,390	10,000
<b>Total</b>	<b>48,283</b>	<b>79,200</b>

*Sugarcane (Saccharum officinarum)* is grown in all the taluks of the district. The total area under this crop in 1965-66 was 13,000 acres. The figures given below indicate the extent of acreage under sugarcane cultivation in the several taluks of the district in 1959-60 and 1965-66 :—

Taluk	Acreage	
	1959-60	1965-66
Kolar	175	..
Mulbagal	1,704	..
Srinivasapur	940	1,700
Chintamani	160	..
Sidlaghatta	500	..
Bagepalli	1,250	..
Gudibanda	580	1,300
Gauribidanur	5,690	10,000
Chikballapur	245	..
Malur	800	..
Bangarpet	400	..
<b>Total</b>	<b>12,444</b>	<b>13,000</b>

The planting of sugarcane is generally taken up about the months of January and February and harvesting is done during

the month of December or January. Nearly 90 per cent of the sugarcane-growing area has been brought under improved varieties like CO-419 and HM-320. These strains are popular in Gauribidanur and Srinivaspur taluks, where cane is grown largely for manufacture of jaggery. The Sugarcane Development Scheme organised by the State Agricultural Department has been of immense benefit to increase the sugarcane area under the new varieties. The average yield is 28 tons per acre.

Sugarcane is considered as the most important money crop of the district. It is grown only under the most assured sources of irrigation. Drainage is very important for the crop and the cultivator generally tries to provide it in his own traditional way. He works up his soil with additions of clay or sand consistent with the requirements of a clay loam. The land meant for sugarcane is given a very thorough preparatory tillage and is ploughed several times. It is then worked with the *kunte* and the harrow. Weeds and stubble are gathered and burnt. The clods are broken by using mallets. Farmyard manure is then applied. The sugarcane field is ploughed into ridges and furrows, about 1½ to 2 feet apart, and the cane sets are planted in these furrows, after which the irrigated water is let in. The crop requires constant attention during the first four to six months of its growth. Soon after planting the sets, hand-weeding becomes necessary. As the crop acquires height, the canes are supported by earthing them up. This is done three to four months after planting.

**Early  
research**

Sugarcane cultivation and the jaggery industry have received special attention in the district. The whole of Gauribidanur taluk is well-suited for sugarcane production, and out of a total cropped area of 13,000 acres, this taluk alone accounts for 10,000 acres. Research work pertaining to the development of sugarcane and the jaggery industry was started as early as 1897 by the Chemical Section of the Mysore Agricultural Department. Dr. Lehmann, who was then the Agricultural Chemist, wrote a valuable report in 1904-05 wherein he devoted a major portion to his elaborate studies on sugarcane-crushing by various types of mills. He laid particular emphasis on the preservation of the quality of juice after the milling process and also of the manufacture of centrifugal sugar. He published also an informative article on "Improvement of the sugar industry in Mysore" in the Agricultural Journal of India, Vol. II, Part I (1907), which was considered a valuable contribution to the study of this important commercial crop in Mysore. The sugarcane then grown in Kolar district was the *Pattapatti* or the striped variety, about which Dr. Lehmann noted that it was of an excellent quality containing 16 to 19 per cent of cane sugar and about half per cent of glucose.

The sugarcane crop matures in about 10 to 16 months depending on the variety used. In the taluks of Sidlaghatta, Bangarpet, Mulbagal and Gauribidanur, there were, in old days, several establishments for manufacture of the local white sugar by recourse to a method which was comparable to the West Indies method of manufacturing "claying sugar". With the availability of refined and cheaper sugar, these traditional manufacturing units went out of business. The famous Kolar *Boora* sugar is not now seen in the market. However, the jaggery industry pursued as a cottage industry is still thriving in Gauribidanur, Mulbagal and other taluks. Recently, a co-operative sugar factory has been established at Gauribidanur (See Chapter V).

The total area which came under the sugarcane development scheme in 1966-67 was 6,400 acres. A total expenditure of Rs. 20,906 was incurred during 1966-67 for sugarcane development. Altogether, 11 demonstration plots for manurial development and 22 plots for weed control were conducted by the officers of the Agricultural Department.

*Groundnut* (*Arachis hypogaea*) is a popular oil-seed grown in all the taluks of the district in a total area of about 89,200 acres, out of which, Gauribidanur, Chintamani and Bagepalli account for 55,500 acres. The following statement indicates the talukwise extents of acreages under groundnut as per figures supplied by the District Statistical Office for the years 1959-60 and 1965-66 :—

Taluk	Acreage	
	1959-60	1965-66
Kolar	800	1,100
Mulbagal	15,694	11,500
Srinivasapur	2,300	6,800
Chintamani	5,100	22,500
Sidlaghatta	420	..
Bagepalli	14,010	18,500
Gudibanda	490	4,500
Gauribidanur	9,915	14,500
Chikballapur	1,780	3,000
Malur	2,210	800
Bangarpet	5,990	6,000
Total	58,709	89,200

The cultivation of groundnut in the district is conducted principally as a dry-land crop. In the taluk of Gauribidanur and its neighbourhood, it is also grown as a wet crop under semi-irrigated conditions. The crop is cultivated generally in the better class soils, the light red and ashy coloured loams inclined to be sandy. Even stiffer loams tend to foster the growth of groundnut. At present, the crop is grown largely as the main crop of the year, but earlier maturing varieties called the Spanish and Small Japan have also been introduced. The usual variety takes about five months to mature and bears thin long pods with three or four seeds in the pod. The land receives a good initial tillage in the early monsoon rains. Sowing is done in May for the early maturing variety and in July for the long season crop. Seeds are sown in plough furrows, about one foot apart and about 4 inches in the rows. After the plants come up, the rows are worked with a *hunte*. After a period of  $3\frac{1}{2}$  to  $5\frac{1}{2}$  months, the leaves become yellowish and begin to dry.

New varieties like HG-7, Spanish and HG-10 have been introduced under the oil-seed extension scheme. The area under the new varieties is increasing. The yields vary from variety to variety. The later maturing types yield more than the early varieties. While early varieties yield about 500 lbs. per acre, the later maturing varieties about 800 lbs. The semi-irrigated crops yield twice or thrice these quantities.

For oil-seeds development in the district, a financial outlay of Rs. 0.63 lakh was made under the Third Plan. The target under the Oil-seeds Development Scheme for 1966-67 was to bring 14,350 acres under oil-seeds. But the achievement far exceeded the target. The acreage under oil-seeds development came to 37,497 acres in the district. Six demonstrations were held during 1966-67. It is estimated that about 5 per cent increased yield was obtained. The expenditure incurred under this scheme for the year 1966-67 was Rs. 7,539.

#### Bajra

*Bajra* or *Sajje* (*Pennisetum typhoideum*) is grown in most of the taluks. The gravelly soils found in the district are well-suited for this crop. The total acreage under this crop was 17,587 during 1965-66. It is raised as a dry land crop; it is sown both pure and also mixed—generally with ragi. The varieties differ in size, colour of the earheads and in the presence or absence of awns. The grain is eaten in the same way as rice.

#### Pulses

According to a statement prepared by the District Statistical Office showing the areas under principal crops, a total acreage of 66,054 is shown under pulses in 1965-66. Among pulses, horsegram (*Hurali* in Kannada) is the main crop, having a total

acreage of 29,032 in 1965-66. All the taluks, except Mulbagal, grow horsegram. Among them, the taluk of Gauribidanur occupies the pride of place with a total of 7,300 acres under horsegram during 1965-66.

Generally, horsegram is grown either as the main crop of the year or along with ragi, jowar or gingelly. This pulse is grown as an *akkadi* crop in ragi-growing fields. Wherever suitable conditions are not found for sowing of ragi, horsegram is produced as a dry crop. Most of the surplus land of the cultivator, which he cannot prepare sufficiently well in time for the ragi crop, is also put under horsegram. When the monsoon rains fail, the land is then sown for raising horsegram. The sowing, which is done generally by broadcasting, takes place in the months of September and October. The crop becomes ready for harvest in about three and a half months. Threshing is done under the stone-roller. About two quintals per acre are the normal yield in the district. Horsegram is the poor man's food and is eaten boiled or fried. It is also given as food to horses. Among the other varieties of pulses, blackgram (*Uddu*) and greengram (*Hesaru*) are grown in all the taluks.

Among vegetable crops, potato is grown widely in Malur, **Potato** Sidlaghatta and Chikballapur taluks. The total acreage in all the taluks in the year 1965-66 was 5,000, of which Chikballapur alone accounted for 3,000 acres. Gudibanda was the next with 500 acres. The Simla variety was usually grown in the district. Of late, the Rangoon variety has become popular as it was found to be better than the Simla variety. Between 300 and 400 maunds per acre is the usual yield in the district. Potato, being an important vegetable crop in the district, the agricultural researchers conducted trials in the cultivation of the Holland variety, particularly in Chikballapur and Kolar taluks. The experiments have yielded good results. It has been shown that nearly 800 maunds per acre can be grown if the Holland variety is used.

The cultivators in the Chikballapur and Kolar taluks have been greatly benefited by these new experiments. There is a great and persistent demand for seeds of the Holland variety and efforts have been made by the Agricultural Department to fulfil these needs. With a view to further improving and helping potato cultivation in the State, a financial allocation of Rs. 3.06 lakhs was made under the Third Five-Year Plan for research work on this crop. The other important garden crops grown in the district include chillies, onions and cashew. The acreage of

four of the garden crops as in 1965-66 are given below :—

<i>Taluk</i>		<i>Chillies</i>	<i>Onions</i>	<i>Cashew-nuts</i>	<i>Betel nuts</i>
Kolar	..	132	330	7	..
Mulbagal	..	28	58	24	..
Srinivasapur	..	300	40	218	82
Chintamani	..	115	40	316	..
Sidlaghatta	..	280	600	54	2
Bagepalli	..	900	65	4	..
Gudibanda	..	123	8	..	..
Gauribidanur	..	1,795	101	..	145
Chikballapur	..	250	1,022	..	3
Malur	..	335	160	8	17
Bangarpet	..	256	26	8	6
<b>Total</b>	..	<b>4,514</b>	<b>2,450</b>	<b>639</b>	<b>255</b>

Mulberry, which is a very important commercial crop, is grown in Sidlaghatta, Chikballapur, Kolar and Chintamani taluks. The total area under this crop was 16,200 acres in 1965-66 (*See* also Chapter V under Sericulture).

About 6,500 acres were under tobacco cultivation in the district in 1965-66. Improved seeds of tobacco were distributed to the farmers to whom guidance was also given on better methods of cultivation of this crop, under the Second Five-Year Plan. In order to bring 1,000 additional acres under tobacco cultivation and to start a demonstration centre in the district, a sum of Rs. 0.45 lakh was allocated under the Third Five-Year Plan.

#### Scientific agriculture

It has been a common saying in India that agriculture is not a paying proposition. This belief has undergone a change in recent years by the progressive adoption of scientific methods of agriculture, to a large extent, encouraged especially under intensive schemes to grow more out of the land. At one time the cultivator was satisfied with what he grew by the old methods, because the produce was then sufficient for his needs. But with the fast growth of population and the changed socio-economic conditions, it became imperative to pay particular attention to agriculture for more production. Various incentives were given to the cultivators so as to make them conscious of the great need to follow improved methods

#### Agricultural implements

Both indigenous and improved implements are being used in the district. The indigenous implements are the wooden plough

(*Marada Negilu*), *Koorige* (Seed drill) and *Heggunte*. Among the improved implements, the K.M. Plough and the K.M. Cultivator are popular in the dry tracts. In the tank irrigated wet lands, Eureka and Gurjar ploughs are quite common. Of late, the paddy puddler and weeder are in use in wet lands and these are becoming popular. The twelve-tined seed drill is being replaced by the six-tined drill. In the paddy fields, new hand-weeders are being introduced for the work of removing the weeds. Improved implements are issued to the cultivators on 50 per cent subsidy and demonstrations held on their use. For the tractor and bulldozer organisation and for supply of new tractors and implements on a hire purchase basis, Rs. 4.14 lakhs were allocated for the district under the Third Plan. It is a common feature in the district that the well-to-do agriculturists are coming forward to mechanise their farming methods. During 1965-66, 85 tractors were working in the various taluks of the district.

Compost and farmyard manure are the easily available organic manures and are in ordinary use. The compost is prepared both in rural and urban areas. A system of subsidy is in vogue to encourage cultivators to purchase and transport compost from the various local self-governing bodies. Green manure application is widely practised in wet cultivation. It is also applied in garden crop cultivation. The District Agricultural Organisation is doing intensive propaganda to popularise the planting of green manure plants, such as *Honge* and *Glyricidia sesbania*. Green manure crops like sunnhemp are grown as *akkadi* (*i.e.*, mixed crop), to obtain seeds for the next season. In order to help exploitation of rural and urban wastes, utilisation of bones and supply of green manure seeds, a financial outlay of Rs. 1.14 lakhs was made for the district under the Third Five-Year Plan. A total quantity of 25,720 tons of green manures was estimated to have been produced during 1966-67 and 1,02,625 tons of urban and rural compost were prepared and distributed during the same period in the whole district.

#### Manures and Fertilisers

Use of inorganic manures is also increasing and all the popular chemical fertilisers are being used in the district. Intensive experimentation has been conducted in the use of new inorganic manures like Ammonium Sulphate, Nitrate, Urea, Super-phosphate and Ammonium Nitrate. There is a great demand for Ammonium Sulphate, Urea and Super-phosphate in all the taluks. The cultivators have become increasingly aware of the benefits, and the demand put forth for speedy and timely supply of modern fertilisers is exceeding the supply. In the year 1966-67, a total quantity of 16,776 tons of chemical fertilisers was distributed to cultivators, nitrogenous fertilisers alone accounting for 11,360 tons. A statement indicating the quantities of chemical fertilisers



distributed from 1959-60 to 1966-67 and the approximate total costs of the same is appended at the end of the chapter.

**Seed multiplication**

Three Seed Farms are located in the district. They are: Burudagunte Seed Farm in Chintamani taluk, Varadahalli Seed Farm in Chikballapur taluk and Chikadasarahalli Seed Farm in Sidlaghatta taluk. All of them were started in 1958. The Burudagunte Seed Farm is situated 22 miles north of Chintamani town. The taluks which are in the jurisdiction of this Seed Farm are Chintamani, Srinivaspur and Kolar. A total area of 52.07 acres has been set apart for seed multiplication work in this Farm. The Varadahalli Seed Farm is situated four miles from Chikballapur on the Chikballapur-Sidlaghatta road. This Farm is serving Chikballapur, Gauribidanur and Gudibanda taluks. A total area of 50 acres has been reserved for seed multiplication work in this Farm. The Chikadasarahalli Seed Farm is four miles south of Sidlaghatta. This Farm is serving Sidlaghatta and Bagepalli taluks. It has an area of 25 acres. These Farms multiply the nucleus seeds for distribution to registered seed-growers. The following statement indicates the extent of distribution of such seeds during the year 1965-66 :—

<i>Variety</i>	<i>Distribution in Quintals</i>	
Paddy	..	245
Ragi	..	140
Groundnut	..	23
Sesbania	..	6
Castor	..	1.33

**Pests and diseases**

Among dry land crops, ragi is not infested by too many pests or diseases and the crop has earned the name as one of the hardiest of crops. When compared to other staple crops, ragi is remarkably less subject to infestations. The 'flea beetle' is one of the pests which is quite common in the ragi-growing areas. This insect is identified as dark in colour and quickly flies off when disturbed. The beetle sucks the milk of the grain and thereby causes the wilt of the plants. Usually, June and July are the months when the plant is infested by this pest. The treatment recommended in this case is hexidol spraying, some 15 to 20 lbs. per acre.

The shoot-borer or the leaf-webber is another insect which attacks the stem and thereby causes a slow death of the plant. The shoot-borer lodges itself inside the stem, just in the same way as it does for the paddy plant. After the pest attacks the plant, the foliage withers. If the stem is cut, the borer can be seen. The usual treatment for this is spraying of any one of the known insecticides.

The main ragi season infestation is by the hairy caterpillar. The caterpillar lodges itself on the plant and eats away the leaves making the plant to wilt. The shoots are also affected. For the *Kharif* ragi, attack by hairy caterpillars is common. They feed on leaves and shoots. Usually, insecticides are sprayed and the pest is controlled.

Among known diseases, the 'ragi blast' is particularly troublesome during the period from June to September. Similar to paddy blast, the disease affects the healthiness of the plant and makes it wither. The affected plants are treated with Bordeaux mixture.

The paddy crop in the district raised under tank irrigation is vulnerable to attacks of case worm, stem-borer and blast. The case worm insect is common in all paddy tracts and attacks the transplanted paddy plants. The older plants are not usually infested. The case worm adult is a small-sized moth with white wings. The larva constructs a case out of cut blades and lives within attacking distance from the plant. It protrudes its head out of the case and feeds on the tissue of leaves. The presence of white streaks on leaves and cases attached to plants is a sure indication of the prevalence of the insect. There are traditional methods to prevent the spread of this attack. Flooding the affected field with water with a thin film of kerosene oil and dislodging the cases by passing a rope or pole across the field controls the pest.

The stem-borer moth is a medium-sized insect which bores into the stem and causes 'dead heart' in young transplanted plants. Occasionally, seedlings in the nursery are also bored. The presence of 'dead hearts' and chaffy earheads indicates the prevalence of the pest in the area. Various control measures are adopted to put down the pest. Commercial insecticides are used to dip the seedlings prior to transplanting. Spraying of insecticides is also done a fortnight after transplanting.

The worst disease affecting the paddy crop is the blast locally known as *Benki-roga*. It is a fungus disease often caused by excessive application of nitrogenous fertilisers, late planting, infection of the previous crop and humid cloudy weather. This disease spreads rapidly through wind and rain. The infected straw and chaff also convey the disease to a great distance. The common method of treatment employed to arrest the growth of this disease is to plough the field immediately after the harvest and to treat the seed with organo-mercurial fungicides.

Other pests and diseases, which are common in the district, are: Ephilona beetle on potatoes, Thrips on onions, Caterpillars

on groundnuts and Aphids on tobacco. The plant protection staff stationed in various taluks and the village level workers help in controlling these pests and diseases. A financial outlay of Rs. 1.80 lakhs had been made under the Third Five-Year Plan for plant protection work in the district. A sum of Rs. 1,33,000 was provided during the year 1966-67 for the purchase of chemicals which were distributed to the cultivators on 50 per cent subsidy basis through the Taluk Development Boards.

**Agricultural  
propaganda**

Efforts have been made by sustained propaganda and demonstrations to inculcate in the minds of the cultivators the great need to follow the modern methods of agriculture. Since agricultural extension work is now entrusted to the various Development Blocks, the Agricultural Extension Officers attend to this aspect of work and also give training to selected farmers in the improved practices of agriculture. Two district-level training camps were held in June 1966 and October 1966 to prepare the cultivators in the intensification programme. Similarly, block-level, circle and village-level programmes were also conducted during 1966, both during *Kharif* and *Rabi* seasons. Young Farmers' Clubs have been started in all the 15 block areas. Enlightened young farmers have joined themselves in an endeavour to advance the interests of agricultural extension. The 11 Taluk Development Boards render assistance to these clubs, through which the message of scientific agriculture is permeated in the rural areas. The Information Wing of the State Agricultural Department is also disseminating useful knowledge on agricultural practices, by various means. The Social Education Section of the Development Blocks also co-operates in the intensification programme.

With the object of applying co-operative principles to pursuits of agriculture, four farming societies were formed in the district in 1960. Their number had increased to 11 in 1965-66. Particulars of these societies and other co-operative institutions which help the agriculturists are given in Chapter VI.

**Intensive  
Agricultural  
Area Pro-  
gramme**

The main objective of the Intensive Agricultural Area Programme is to canalise all available resources and efforts to step up the yield per acre of the principal crops. Recent advances in scientific agriculture and the results of research work available from many sources, particularly from the Indian Council of Agricultural Research, New Delhi, also serve as guide-lines in the execution of the intensive programmes to step up agricultural production. All the major crops grown in the district are usually selected for this purpose and increased production is aimed at by the process of selectivity, taking the help of selected progressive farmers. The farmers so selected are then given special training in the methods of intensified production of the crops in view

and it is through them that improved cultivation practices are spread. High-yielding varieties like Taichung-65, ADT-27 (paddy), hybrid maize and hybrid jowar, which are all capable of yielding cent per cent higher yields than the traditional varieties, are also introduced and popularised on a large scale. The methods adopted to intensify agricultural production serve effectively to give a new orientation to farming practices and help to bring about a break-through. The programme envisages a quick implementation, without undue delays.

The Kolar district, where the imperative need to get more out of the arable land had been for long keenly felt, was selected for the starting of the Intensive Agricultural Area Programme during 1966-67. A special staff consisting of a Project Officer of the status of a Senior Class I Officer, assisted by two subject-matter specialists, ten additional Agricultural Extension Officers, 50 gram-sevaks and the necessary office staff was sanctioned by the Government. This staff worked from 1st April 1966 to 15th February 1967. From the latter date, the set-up of the Agricultural Department was reorganised and the Project Officer of the Intensive Agricultural Area Programme became the Deputy Director of Agriculture of the district. The two subject matter specialists working under the Project Officer were designated as Gazetted Assistants. Another Gazetted Assistant was also appointed bringing the number to three, one for seed development, one for manure development and the third for plant protection. The district was divided into two separate sub-divisions, with headquarters at Mulbagal and Chikballapur, under the control of Assistant Directors of Agriculture.

All the eleven taluks of the district have been covered by the Community Development Programme and there are, at present, 15 development blocks. Each block is headed by a Block Development Officer assisted by an Agricultural Extension Officer and ten gram-sevaks. All the work connected with the intensified agricultural programme is put through the block agency.

The implementation of the Intensive Agricultural Area Programme to step up food production depends largely on seasonal factors also. The augury was good and the favourable seasonal conditions during 1966-67 encouraged those in charge of this task. At the time when the programme was launched, the south-west monsoon commenced a little earlier than expected. These timely wide-spread showers in 1966 helped the launching of the new scheme. These good rains enabled the cultivators of the district to take up sowings of *Kharif* crops in time. But subsequently, in July of the same year (1966), the rains were scanty. But from August 1966 to November 1966, good rains were received throughout the district. All the available irrigation sources like

tanks and wells got copious supplies of water. From the point of view of agricultural meteorology, the year 1966 made a history with about 65 inches of rain as against the average of about 28 inches. In general, the seasonal conditions that prevailed during 1966 could be considered as highly favourable. The crops in general (except the ragi crop), and the high-yielding crops in particular, were richly benefited by these rains. The yields obtained in respect of most of the crops, both rainfed and irrigated, were above normal during the year. But the ragi crop suffered severely due to excessive rains. Vast areas of ragi were subject to complex diseases. Apart from this, the Intensive Agricultural Area Programme bore rich fruit and gave ample benefits.

**High-yielding  
variety  
programme**

This programme was launched for the first time in the *Kharif* season of 1966-67. Principally, three crops, *viz.*, hybrid maize, hybrid jowar and Taichung-65 paddy were selected for the purpose. During the period, the rainfall position in the district, as already stated, was entirely satisfactory. The available irrigation sources like tanks and wells were also made use of fully. The service co-operative societies spread all over the district took a leading part in the implementation of the programme by undertaking the task of distributing improved seeds to the cultivators. The improved seeds chosen were Taichung-65, Taichung native-1 and the ADT-27, which were known to give good yields. These various improved seeds were procured in time by the service co-operatives and promptly distributed. So also hybrid maize and jowar seeds were obtained from processing centres and stocked by the Taluk Agricultural Produce Marketing Co-operative Societies and distributed to the circle societies. By such efficient process, the whole district was covered by this scheme.

*Taichung-65 Paddy* :—The Taichung-65 paddy is a high-yielding cosmopolitan variety of paddy imported from Taiwan. This specialised strain is highly responsive to doses of fertilisers. The duration of this crop is about 140 to 145 days. The Taichung-65 paddy seeds come up very well in the monsoon as well as summer seasons. It can be sown as a mid-season crop also. It is observed that the paddy plant of this variety grows to a height of three feet. At some places, where a very heavy dose of manure was applied, the plant was seen to grow to a height of even five feet. Experiments conducted in the rice research stations have proved that the seed rate per acre of this strain is 30 kilograms. It is generally sown in lines of two inches apart. The seedlings, when 20 days old, are transplanted.

*Hybrid Maize* :—The variety selected for hybrid maize sowings is called Deccan hybrid. This particular variety responds

favourably to all types of soils and is known to give ample yields. Generally, six kilograms of hybrid maize are sown in an acre.

*Hybrid Jowar* :—The familiar CGH-1 variety was selected to achieve maximum production in jowar. This high-yielding strain has helped considerably to step up production.

The cultivators were given timely guidance in the execution of this important high-yielding variety programme in the district. The following statement indicates the targets and achievements and the average additional yield per acre obtained during the year 1966-67 :—

<i>Crop</i>		<i>Target (acres)</i>	<i>Achievement (acres)</i>	<i>Average additional yield per acre</i>
Hybrid Maize	..	6,350	2,144	20 quintals
Hybrid Jowar	..	1,900	360	5 quintals
Taichung—65 Paddy	..	5,420	3,740	6½ quintals

The intensification programme became the spearhead of the agricultural activities of the district, starting from the year 1966. The primary task was the preparation of farm plans so as to assess the potentialities of growing more foodgrains. The results achieved in the Intensive Agricultural District Programme in Mandya district served as a guideline to go ahead with the programme in the Kolar area also. In formulating the farm plans, various factors concerning the particular areas were taken into consideration and the targets to be achieved were indicated. These are called “simple farm plans” as distinguished from the detailed farm plan adopted in the Mandya area. In the Kolar district, it was intended to prepare 45,000 individual farm production plans. By the end of June 1967, 38,000 farm plans were ready. The target and achievement acreages of the crops selected for intensification, other than those included in the high-yielding variety programme, are shown below :—

<i>Crops selected</i>		<i>Target (acres)</i>	<i>Achievement (acres)</i>
Dry-land Ragi	..	1,06,562	65,020
Irrigated Ragi	..	..	6,077
Paddy	..	20,526	20,000
Groundnut	..	20,562	11,892
Sugarcane	..	..	12,360

**Demonstrations**

To popularise the methods of intensification of agriculture, holding of demonstrations, wherever feasible, becomes imperative. Purposeful demonstrations were held in the several areas of the district, so as to instil in the minds of the cultivators the possibilities of growing more out of the land and to prove that increased yields could be obtained by following scientific methods of agriculture. In respect of Intensive Agricultural Area Programme, three selected crops, *viz.*, dry-land ragi, irrigated ragi and paddy were chosen for the purpose of holding the demonstrations. During 1966-67, 177 demonstrations were held in respect of dry-land ragi, 98 in respect of irrigated ragi and 158 in respect of paddy.

**Loans**

In order to achieve the maximum benefit from the programme, liberal loans were given throughout the district, to those cultivators who readily came forward to grow more food. The monetary help was extended to both members of co-operative societies and non-members. As per statistics furnished by the Deputy Director of Agriculture, Kolar, a total sum of Rs. 35,75,000 was distributed by way of loans to members and a sum of Rs. one lakh to non-members. This financial help was intended to assist the agriculturists in adopting improved agricultural practices.

**Highest yields**

The Intensive Agricultural Area Programme evoked a positive response from the cultivating public, as they saw to their satisfaction better yields from the soils. The highest yields obtained at the block levels, during 1966-67, are shown below :—

<i>Block</i>	<i>Crop</i>	<i>Yield obtained per acre (quintals)</i>
Kolar and Vemagal	Paddy	27
	Ragi	10
Bagepalli	Paddy	0.75 per gunta
Gauribidanur and Vatadahosahalli.	Paddy	34
Chikballapur	Paddy	32
	Ragi	23
Sidlaghatta	Ragi	0.26 per gunta
Chintamani	Paddy	30
	Ragi	15
Malur	Paddy	33
	Ragi	9
Mulbagal	Paddy	20
	Ragi	10
Srinivaspur	Paddy	22
	Ragi	9
Bangarpet and Bethamangala	Paddy	22
	Ragi	..

In an earnest endeavour to make the Intensive Agricultural Scheme a major success, large quantities of improved seeds of all the crops included in the Intensive Agricultural Area and High-yielding Varieties Programmes were made available. In respect of paddy, seeds of the popular strains, *viz.*, S-661, S-1092, SR-26-B, S-317, S-705 and S-749 were distributed. As regards ragi, H-22, Aruna, Annapurna and Cauvery varieties were made available. Seeds of the most popular varieties of groundnut, *viz.*, HG-8, HG-10, TMW-2 and Spanish were given on a large scale. In selected areas, rosy castor seeds were given.

**Improved  
seeds**

The year 1965-66 had been a very bad year for agricultural pursuits on account of drought. The production of foodgrains was at a very low ebb and the employment opportunities for agricultural labour were poor. The market rates of various foodgrains had reached their climax during the sowing season of the year 1966-67. Later, due to abundant showers, the rates showed a downward trend, particularly during the harvest season and the Intensive Agricultural Area Programme carried out during the year gave a rich dividend. Taking advantage of the favourable seasonal conditions, the targets fixed were high and the achievements were quite profitable.

The Agricultural Extension Agency to which the intensification work is entrusted is guided by the Deputy Director of Agriculture, who has the assistance of all the Block Officers. The extension activities are carried out by having mass as well as individual contacts with the cultivators. Mass contacts with the cultivators are made during the training camps, *jatras* and festivals, field days, seminars, meetings and the like. Individual contacts are made while preparing farm plans and during field visits. Particulars of some of the extension activities carried out during 1966-67 are given below :—

**Extension  
agency**

<i>Type of activity</i>	<i>Number</i>
Publicity and propaganda meetings ..	4,500
Composite demonstrations ..	900
Fertiliser demonstrations ..	220
Indian Council of Agricultural Research demonstrations ..	45
Agricultural exhibitions ..	14
Training camps ..	2

These efforts under the intensification programme gave a spurt to increased agricultural production. Encouraged by these steps, more cultivators came forward to sink irrigation wells and



to instal pumpsets to augment water supply. The cultivation of hybrid maize, hybrid jowar and Taichung-65 paddy varieties has become very popular with the cultivators of the district, so much so that the hybrid varieties are tending to replace the traditional crops like ragi to a certain extent. It is observed that people are also trying to change their food habits in that some of those who were using ragi as their staple food, are now consuming hybrid maize. Wherever dry cultivation is predominant, the cultivators are coming forward to take up soil conservation methods in earnest. The timely application of modern fertilisers is becoming very popular. There is an increasing awareness among the cultivators that the crops have to be properly protected against pests and diseases. The plant protection work is being intensified throughout the area.

**Special Long-term Programme**

Especially the eastern districts of Mysore State from Kolar to Gulbarga are affected by chronic scarcity conditions. It has been said that in these districts a cycle of five years consists of one year of normal harvest, one year of good harvest, two years of scarcity and a year of famine or near famine. The traditional pattern of Governmental assistance has been one of offering doles and providing employment to the population in the construction of scarcity works. These measures, however, gave some temporary relief, but did not help to solve the basic problems.

Therefore, a great need was felt for undertaking measures which would, in course of time, prevent conditions of scarcity from arising. It has been recognised that in spite of certain natural factors, which are adverse to the development of such areas, an adequate number of positive and helpful factors have to be created and that the backward areas offer a good deal of potential for development, once their initial disadvantage is overcome. It has been estimated that as many as 74 taluks in general out of the 173 taluks in the State, covering about 45 per cent of the land area and 41 per cent of the population in 13 out of 19 districts in the State, are affected by scarcity conditions periodically. According to a revised list published in 1967 (*vide* 'Special Long-Term Programme for the Development of Backward areas of the State'), scarcity-affected areas in the Kolar district are the following :

Bagepalli, Sidlaghatta, Gudibanda and Chikballapur taluks and parts of the Kolar taluk.

**Integrated measures**

In 1963, the State Government appointed a Special Officer to draw up a perspective plan after an elaborate study of the needs and assessment of potentialities of such areas in the State, and a special and integrated long-term programme covering

several fields of development was drawn up and is being implemented. Lack of water being the major problem of these areas, emphasis has been laid on the creation of new water resources and greater utilisation of the existing ones. Minor irrigation schemes for these areas include surface irrigation wells and pump-sets, lift irrigation, bore-wells and tanks, while the schemes for land improvement include afforestation, contour-bunding and tractor and bulldozer services. Cattle development, poultry, piggery, sheep-breeding, fisheries, sericulture, horticulture, agro-industries, marketing, etc., have also found an important place in the programme. It has been estimated that it may take 25 to 30 years to carry out the entire programme at a total cost of about Rs. 280 crores, out of which a sum of Rs. 18.18 crores has been allocated for the Kolar district.

Crops of fruits comprising mangoes, citrus fruits and grapes are grown in almost all the taluks in the district. Large areas in Srinivaspur and Chintamani taluks produce mangoes which are indigenously called *Rasapuri*, *Badami* and *Malgoba*. The mango crop is raised in summer months and exported to railheads from where they are transported to big cities like Bangalore and Madras. The following table gives the acreages of the principal fruit crops in the district as in 1965-66 :—

<i>Taluk</i>		<i>Mangoes</i>	<i>Citrus</i>	<i>Grapes</i>
Kolar	..	915	12	32
Mulbagal	..	912	..	..
Srinivaspur	..	4,703	13	2
Chintamani	..	1,356	20	4
Sidlaghatta	..	68	24	35
Bagepalli	..	167	..	..
Gudibanda	..	86	..	..
Gauribidanur	..	384	59	3
Chikballapur	..	220	15	32
Malur	..	217	42	75
Bangarpet	..	396	60	25
Total	..	9,424	245	208

In order to supply 1,70,000 fruit plants, rejuvenate 750 acres and bring 500 more acres under orchards and thereby help the development of fruit production in the district, a sum of Rs. 1.87 lakhs was allocated under the Third Five-Year Plan. For a State-level scheme for conducting fruit research work with

its main centre in this district, a financial outlay of Rs. 2.39 lakhs was also made under the Third Plan. Growing of vegetables, which can contribute in a large measure as a protective food, is also being encouraged and, for this purpose, Rs. 0.30 lakh had been set apart in the district under the same Plan.

#### **Famines and floods**

In the closing years of the eighteenth century, the area in which the present revenue district of Kolar is situated, suffered from a dreadful famine, preceded by bloody wars with the Marathas, who ravaged the countryside. Again, during the invasion of Lord Cornwallis, many died of starvation. In the 19th century, periods of scarcity occurred now and then, particularly in 1824, 1831 and 1833. The decade following 1851 was one of misery as scarcity conditions followed year after year. The great famine of 1875-76 and 1876-77 proved most calamitous. Till the month of March 1877, the situation in the district did not improve. The area suffered enormously. Thousands of starving people were being fed from relief kitchens. Lord Lytton, the then Viceroy, visited the State and appointed Sir Charles Elliot as the Famine Commissioner with a large staff for organising relief. The foodgrain prices had shot up to an unprecedented extent. About 20 years later, in 1899, rainfall again was very scanty and the expected north-east monsoon did not materialise. The rains of September and October 1899 were far less than the average.

During the 20th century also, scarcity conditions from failure of rains have continued to arise now and then. The 'heavy rains' which fell in 1903-1904 damaged the crops throughout the district. The north-east monsoon, which was eagerly expected during 1904-1905, failed, throwing the agriculturists into despair. The year 1908-1909 was also a bad one. The south-west monsoon of 1923 was scanty in Kolar district and the north-east monsoon of that year also completely failed. In contrast to this situation, the south-west monsoon of 1924 was plentiful, damaging the dry crops. From then on, the district has periodically suffered from partial failure of rains, poor production and consequent distress. After the advent of freedom, relief measures have been augmented and the successive Plans have created varied avenues and opportunities for fruitful economic endeavours as the result of which now less suffering is caused by scarcity conditions. When such conditions arise, recovery of the land revenue due from the cultivators is suspended and liberal remissions of revenue are sanctioned and prompt and adequate relief measures are organised. The year 1966 was a good one, when there was an abnormally heavy rainfall in the district, but during 1967 the rains failed again, causing anxiety and inadequate production. The Intensive Agricultural Area Programme had a setback during the year 1967.

Famine, in the sense given to it in the Mysore Famine Code, has not been declared in any area of the district during the last 45 years. As the district is vulnerable to periodic scarcity conditions, the Government have had perforce to open grain depots, wherever possible, and distributed imported foodgrains through fair price shops. During the periods of distress, the Government have carried out several relief works such as restoration of tanks, sinking of wells and laying of roads to give timely employment to the needy. During such periods, all State Forests were thrown open for grazing purposes. The Taluk Development Boards and the Village Panchayats also initiate helpful measures in providing employment to the people.

**Relief  
measures**

As there are no large and perennial rivers in the district, floods of a serious nature do not occur. But when excessive and abnormal rains occur once in many years, the streams and rivers in the district would swell considerably and some tanks may breach. In living memory, during 1903, abnormal rains fell in all parts of the district causing heavy damage to crops and tank breaches occurred. In that year, the Ramasagara tank bund suffered a serious damage, so also the Somambudhi Agrahara tank. Barring this, heavy floods have not ravaged the area.

#### ANIMAL HUSBANDRY

As in other districts of the State, agriculture in Kolar district also depends to a large extent on available livestock. A cultivator keeps as a rule a pair of bullocks, a few cows and a couple of buffaloes and in addition, he may have some sheep, goats and poultry. From time immemorial, a cultivator's social status in the rural area has been judged by the number of cattle he possesses. Most of the agricultural work like ploughing, drawing water from the wells, threshing the grains and carrying the produce from place to place is done by cattle.

Reliable figures of livestock population prior to 1911 are not available. In the Kolar District Handbook published by the Mysore Government in the year 1914, the livestock population figures of 1911 have been given on the basis of a census taken along with the general census. Those figures as pertaining to 1911 are as follows: cattle 5,67,046 (including buffaloes), sheep 5,15,879, goats 2,70,419 and asses 12,889.

**Cattle Census**

According to the livestock census taken in 1961, there were 1,639 breeding bulls, 1,66,713 working bullocks, 8,442 bulls and bullocks over three years of age not in use for breeding or work, 50,525 breeding cows in milk and 86,851 dry cows, 57,378 cows over the age of three years put to work and 10,403 cows over the

age of three years not put to use. The total number of females in the category of cattle over the age of three years was 2,32,156. The total cattle population according to the 1961 Census was 5,57,357 (2,52,681 males and 3,04,676 females).

The livestock census of 1961 gives details of the buffalo strength in the district. In that year, there were 1,23,700 buffaloes, of which 23,040 were males and 1,00,660 females. The number of female buffaloes has increased due to the greater demand for milk and milk products and also to the better economic condition of the cultivators.

*Livestock census, 1966* :—According to the livestock census taken in 1966, Kolar district had 5,13,277 cattle, 1,20,306 buffaloes, 5,26,024 sheep, 2,13,876 goats, 3,128 horses and ponies, 5,774 donkeys, 28 mules, 30,049 pigs and 7,15,136 poultry. In all, there were 6,33,583 bovines and 14,12,462 livestock including bovines. (See also Appendix).

#### Development of cattle

The development of cattle and buffaloes is very essential not only from the point of view of better agriculture but also in the interests of the farmers and the general public. The Hallikar breed of cattle is a particular popular variety which is bred in this district. Cross-breeds from the Hallikar and Hagalvadi family groups are also found in several areas of the district.

In order to upgrade the local breed of the district, 38 standard stud bulls of Hallikar breed had been distributed under a Free Bull Scheme during the First and Second Five Year Plans. In addition, 36 bulls were given on subvention basis by the National Extension Service and Community Development Blocks in the district. Three centres and four sub-centres for artificial insemination work were also opened, besides establishing five new veterinary dispensaries during the Second Plan. For increasing the milk yield, 100 calves of the Murrah breed and 189 cows of the Haryana breed were distributed after collecting only the transit charges. In 1960-61, a Key Village Block with six units, costing Rs. 71,000, was opened in the Chintamani taluk for taking up the work of improving the cattle breed in an intensive form. For starting four new rural veterinary dispensaries and upgrading three such institutions, an outlay of Rs. 62,000 was made under the Third Plan, which also provided Rs. 1.5 lakhs for the work connected with the improvement of cattle breed. The breeders are also given a subsidy of Rs. 5 per month for each calf born out of insemination in the Key Village Area.

#### Cattle Fairs

Cattle fairs, which serve a useful purpose, have not declined in importance and they are held annually in Kolar, Varanasi and Vokkaleri in Kolar taluk, Mushtur, Chamkalhalli, Byrakur,

Mulbagal town, Yelavahalli and Avani in Mulbagal taluk, Yeldur, Ronur and Kolagurki in Srinivaspur taluk, Burudagunte, Srengerihalli, Konakunte in Chintamani taluk, Chelur, Mitemari and Devaragudipalli of Bagepalli taluk, Mallarahalli, Melur, Kunbigunahalli, Thimmanayakanahalli, Chikkadasarahalli, Devaramallur and Thalakyalabetta of Sidlaghatta taluk, Doddakurugod and Alakapura in Gauribidanur taluk, Honnenahalli and Nandi in Chikballapur taluk, Chikka-Tirupathi, Ulleranahalli, Dadinaikanadoddi, Tornahalli and Kodiyanur in Malur taluk, Kamasandra, Guttahalli, Bangarpet town, Thallapalli and Mallahalli in Bangarpet taluk.

During the Gosamvardhana week, rallies are organised in all the taluks and also in the headquarters of rural veterinary dispensaries. Castration of scrub bulls is not compulsory, but the cultivators come forward of their own accord to get their scrub bulls castrated with the object of getting better breeds. A mass castration of 2,41,515 bulls was undertaken during 1965-66.

As a measure to maintain and improve the health of livestock, **Fodder development** it has been found imperative to reserve some areas to be exclusively sown with fodder crops such as napier grass. During 1965-66, there were 18,378 acres of land put to this use. The taluks which have layer areas under fodder crops are Mulbagal (1,664 acres), Chintamani (1,864 acres), Sidlaghatta (1,806 acres), Gauribidanur (5,430 acres), Bagepalli (967 acres), Chikballapur (2,008 acres), Malur (1,010 acres) and Bangarpet (2,500 acres).

In 1961, there were 5,86,360 sheep and 2,74,365 goats in the district as against 5,26,024 sheep and 2,13,876 goats in 1966. **Sheep and Goats** The census of 1956 showed that there were then 4,97,828 sheep and 2,85,035 goats. In the five years, the sheep strength had increased considerably, while the number of goats had registered a decrease. But when compared with the 1911 census figures, there has been no marked increase. Lack of good pastures and continuous fall in prices of indigenous raw wool seem to be the reasons for this. However, in the development of sheep and wool, Kolar district is playing an important role. A Sheep and Wool Development Unit with Kolar as headquarters is functioning under the control of a Superintendent. There are eight extension units, one each at Avani, Chowdenahalli, Shapur, Sugutur, Kamasandra, Tayalur, Hunkunda and Badamkanehalli. In each of these centres there is a stockman assisted by two shepherd-cum-grazers. Rams of Rajasthan—Marwari breed are kept in use at these centres to upgrade the local breed. A hundred stud rams were also distributed by the National Extension Service Blocks during the Second Plan. According to the experts in sheep-breeding, the sheep generally found in Kolar district do not belong to any distinct breed. As a result of the

working of the new scheme, wool yield from the improved breed is stated to have increased from about 6 to 12 ounces to  $1\frac{1}{2}$  lbs. to  $10\frac{1}{2}$  lbs. per animal per year. For continuation and expansion of this scheme, an allocation of Rs. 1.50 lakhs was made under the Third Plan. The Sheep Breeders' Association situated in Kolar town has a strength of 786 members with 55,100 sheep under its control.

**Horses and Ponies**

The number of horses and ponies is not very large. According to the Livestock Census of 1961, their number was only 1,620. However, the Livestock Census of 1966 revealed an increase in their number and there were 3,128 ponies and horses in the district during that year

**Donkeys and Mules**

The numbers of donkeys and mules, which came under enumeration in 1961, were 6,997 and 21 respectively as against 5,774 donkeys and 28 mules in 1966. These animals are put to various uses as beasts of burden. There were no camels anywhere in the district.

**Pigs**

In 1961, the number of pigs found in the district was 26,546. This number had increased to 30,049 in 1966. During the successive Plans, several facilities were made available for upgrading the local breed of pigs. Piggery Development Blocks are located at Mulbagal, Kolar, Chikballapur, Chintamani, Gudibanda, Bagepalli and Srinivaspur. Berkshire and Yorkshire boars have been supplied. Stud boars are distributed to selected custodians engaged in pig breeding at a nominal cost of Rs. 10 each and each custodian is also given a subsidy of Rs. 5 per month for maintenance of each boar.

**Poultry**

According to the 1961 Livestock Census, there were 2,74,557 hens, 95,200 cocks, 4,94,621 chickens, making a total of 8,64,378 birds. Besides, the enumeration also revealed a total duck population of 3,672 comprising 822 ducks, 1931 drakes and 919 ducklings. According to the Livestock Census of 1966, the total number of poultry in the district was 7,15,136. The development of poultry has good scope as there is increasing demand for eggs and poultry meat. In order to provide improved foreign breeds of poultry throughout the district, a poultry farm was established at Kolar at a cost of Rs. 55,000 during the Second Plan and 9,000 fertile eggs of white leghorn, Rhode Island red and blackminocas varieties, besides 500 adult birds of these breeds, were distributed at concessional rates. Twenty selected farmers from the district were given training in the Hesarghatta Poultry Farm. An Intensive Poultry Development Block has been also established with headquarters in Kolar town. A sum of Rs. 2.50 lakhs was provided for the district under the Third Plan for the expansion of poultry development activities.

The veterinary section of the Department of Animal Husbandry and Veterinary Services deals both with the treatment and the prevention of cattle diseases. The animal diseases generally prevalent in Kolar district are Haemorrhagic Septicaemia, Black-quarter, Anthrax, Sheep-pox, Foot and Mouth disease, respiratory, urinary and digestive disorders. These diseases are controlled by inoculations and proper treatment by qualified veterinarians. There were 33 veterinary institutions comprising one Veterinary Hospital, 11 Taluk Veterinary Dispensaries and 21 Rural Veterinary Dispensaries functioning in the district in 1966-67 and their particulars, taluk-wise, were as follows :—

<i>Taluk</i>	<i>Type of veterinary institution and place.</i>
Kolar ..	(1) Veterinary Hospital, Kolar. (2) Rural Veterinary Dispensary, Vemagal. (3) Rural Veterinary Dispensary, Madderi.
Bangarpet ..	(1) Taluk Veterinary Dispensary, Bangarpet. (2) Taluk Veterinary Dispensary, Kolar Gold Fields. (3) Rural Veterinary Dispensary, Guttahalli. (4) Rural Veterinary Dispensary, Vangasamudra. (5) Rural Veterinary Dispensary, Chickanakadahalli.
Sidlaghatta ..	(1) Taluk Veterinary Dispensary, Sidlaghatta. (2) Rural Veterinary Dispensary, Ganjiguta.
Srinivaspur ..	(1) Taluk Veterinary Dispensary, Srinivaspur. (2) Rural Veterinary Dispensary, Ronur. (3) Rural Veterinary Dispensary, Lakshmi-pur.
Chintamani ..	(1) Taluk Veterinary Dispensary, Chintamani. (2) Rural Veterinary Dispensary, Buttalipalli. (3) Rural Veterinary Dispensary, Burudagunte.



<i>Taluk</i>	<i>Type of veterinary institution and place.</i>
Mulbagal ..	(1) Taluk Veterinary Dispensary, Mulbagal. (2) Rural Veterinary Dispensary, Byrakur. (3) Rural Veterinary Dispensary, Tayalur. (4) Rural Veterinary Dispensary, Devarayasamudra.
Malur ..	(1) Taluk Veterinary Dispensary, Malur. (2) Rural Veterinary Dispensary, Masti. (3) Rural Veterinary Dispensary, Shivara- patna.
Bagepalli ..	(1) Taluk Veterinary Dispensary, Bagepalli. (2) Rural Veterinary Dispensary, Patha- palya. (3) Rural Veterinary Dispensary, Chelur.
Gudibanda ..	(1) Taluk Veterinary Dispensary, Gudibanda. (2) Rural Veterinary Dispensary, Yellodu.
Chikballapur..	(1) Taluk Veterinary Dispensary, Chikballa- pur. (2) Rural Veterinary Dispensary, Pere- sandra.
Gauribidanur..	(1) Taluk Veterinary Dispensary, Gauri- bidanur. (2) Rural Veterinary Dispensary, Darinaya- kanapalya. (3) Rural Veterinary Dispensary, Manche- nahalli.

In 1966, Key Village Centres and Livestock Insemination Centres were working at the following places :—

Kolar ..	Main Centre.
Srinivaspur ..	Main Centre.
Sidlaghatta ..	Main Centre.
Kolar Gold ..	Sub-Centre.
Fields.	
Chintamani ..	Key Village Centre.
Malur ..	Sub-Centre.

Mulbagal ..	Key Village Centre.
Bagepalli ..	Sub-Centre.
Gudibanda ..	Sub-Centre.
Gauribidanur..	Sub-Centre.
Chikballapur..	Sub-Centre.
Bangarpet ..	Sub-Centre.
Tayalur ..	Sub-Centre.
Hannur ..	Sub-Centre.
Shivarapatna..	Sub-Centre.

## FISHERIES

The Palar and North Pinakini rivers, Bethamangala and Ramsagara reservoirs and 394 major and 1,531 minor tanks are the main sources of fisheries in the district. The scientific and common names of the important fishes found in the district are given below :—

*Carp*s

<i>Scientific name</i>	<i>Common name</i>
Barbus sps. ..	Gende
Barbus puckeli ..	Pakke
Cirrhina fulungre ..	Arja.

*Cat Fishes*

Callichrous bimaculatus	Godhle
Wallago attu ..	Balemeenu
Saccobranchus fossilis	Chelu Meenu
Clarias magur ..	Anemeenu—Marve
Mystus vittatus ..	Girlu

*Murrels*

Ophiocephalus marulius	Hoovumeenu
Ophiocephalus striatus	Kuchumeenu
Ophiocephalus punctatus	Korava
Ophiocephalus gachuva	Holakorava

*Miscellaneous*

Mastacembelus armatus	Havumeenu
Notopetrus notopterus	Chavale, Volagathatte
Prawns	Seegadi

**Fishing  
methods**

Fishing in the rivers, reservoirs and tanks is done by means of cast nets, gill nets, drag nets, prawn nets, long-lines, fish traps and rod and line.

*Cast Nets.*—This is a common type of net used by fishermen in this district. The diameter of the net varies from 15 feet to 20 feet and size of the mesh varies from 1/4 inch to 1 inch. The net, which is made of cotton yarn, is circular in shape with a hauling-in-cord passing through an aperture in the centre. From the upper end of the cord, about fifteen subsidiary cords radiate towards the margin of the net where these are all tied to a thick marginal cord termed foot rope. On the foot rope, sinkers of iron piping are inserted at varying intervals. The fisherman moves noiselessly to the spot where he desires to cast the net. The net when cast spreads out into a circle. The sinkers drag the net to the bottom, trapping the fish underneath. The fisherman slowly drags up the hauling-in-cord, and the margin of the net comes closer and closer towards the centre, when he finally takes the net out of the water along with the fish.

In Ramsagara tank, the fishermen go into the water on agave rafts in two rows and cast the nets simultaneously, thus trapping the fish in the area between the two rows.

*Gill Nets* :—These nets are used for fishing in reservoirs and big perennial tanks. In this net, the fish gets caught in the mesh of the net when trying to swim through. The fish is able to get its head through a mesh but not its body and when it attempts to free itself, the twine slips under the gill cover and the fish becomes gilled. The nets are rectangular in shape and mostly made of cotton yarn. The length of the net varies from 75 feet to 100 feet and breadth 2 feet to 5 feet with floats and net sinkers. The mesh size varies from 1½ inches to 4 inches. These nets, when laid out in the water, stand more or less vertically and are laid either in the night or in the early hours of the morning for being collected after sunrise. Mostly carps and cat fishes are caught in these nets.

*Drag Nets.*—These nets are mostly used in tanks. It is a strong net, rectangular in shape, made of cotton yarn; the size of the mesh varies from 1/4 inch to 1 inch and length from 100 feet

to 150 feet and breadth 8 feet to 10 feet. The net is operated in a depth of 4 feet to 5 feet of water.

*Prawn Nets.*—The prawn net is more or less like a cone in shape. The wider end is opened and kept in position by a set of three poles, two of which are about 6 feet in length, out of which one is slightly longer than the other (the extra length serves as a handle) and the third is at the base and is about 4 feet in length. At the apex of the cone is an opening, which leads into a long cylindrical linen bag. The net is pushed in shallow water with the wide mouth directed forwards. The water is filtered through the net and the prawns and small size fish are driven into the linen bag. The prawns and the fish are removed now and then by detaching the bag from the net. The weeds are prevented from entering the net by a triangular wire-meshed screen tied to the mouth of the net. The net is operated in shallow areas of the tanks in a depth of about 4 feet to 5 feet.

*Long-line.*—The line consists of a coir cord, varying from 200 feet to 300 feet in length and short and strong cotton threads, to the free ends of which hooks are tied or attached to the coir cord at intervals of about 2 feet to 3 feet. The baits offered are earthworms, live fish and frogs. They are operated both in shallow and deeper waters. In Ramsagara tank, the fishermen go on improvised rafts (*theppas*) to tie the line between two poles meant for the purpose. Mostly cat fishes and murrels are caught in the long lines.

*Fish Traps.*—These are more or less conical baskets. The ribs of the baskets are formed of mostly splints of bamboo or sometimes ribs of cocoanut leaves. They are fixed against small channels and streams. Mostly, small fishes are caught in this method of fishing.

*Rod and Line Fishing.*—This is a common method of fishing used by non-professional people. The rod consists of a long bamboo stick of about 5 feet to 10 feet in length. The line made of cotton or hemp thread is tied to the narrow end of the rod. The hooks used generally are from half to one inch. The baits used are earthworms, dragon flies, house flies, flour paste, etc.

Conservation is an important aspect in the development of fisheries. It is necessary to conserve the fishery resources for planned exploitation. The Fisheries Department has introduced a system of auctioning fishery rights of all major tanks and issues licences for fishing in reservoirs and big tanks like Ramsagara tank, Markandeya reservoir, Kamasamudra tank, etc. **Conservation**

**Fishing  
Communities**

The most important fishing community in the district is that of *Besthas*, who live in villages situated around big reservoirs like Bethamangala reservoir, Ramsagara tank and other major tanks. Tigalas, though not a fishing class by profession, are also engaged in fishing in some places. As the fishing season is not spread throughout the year, fishermen generally do not entirely depend upon fishing for their livelihood. They have taken to agriculture and some also work as labourers.

**Fish  
Marketing**

There are no fish markets in any place in the district built specially for the purpose. The fish that is caught is sold by fishermen or by vendors by squatting in the open areas. Though there is ample demand for fish, the supply is meagre. There is good scope for developing fish marketing in this district, especially in the Kolar Gold Fields. Fresh iced fish is received in small quantities by train from Malabar coast and Mettur reservoir. There are no facilities for preserving fish, since no cold storages exist in the district.

**Markandeya  
Fish Farm**

A fish farm was established in the year 1942-43 below the Markandeya tank, which is 11 miles from Bangarpet and  $2\frac{1}{2}$  miles from Budikote. There are four nursery ponds and four rearing ponds in this fish farm.

Fry of quick-growing varieties like Catla, Rohu and Mrigal are reared in this fish farm and the fingerlings are stocked in Markandeya tank and other perennial sheets of water in the district. Exotic varieties like *Osphronemus gourami* and *Cyprinus carpio* have been successfully bred in the ponds of this farm. *Etioplus suratensis*, which is a backwater fish, was first reared and successfully bred in this farm and the fingerlings were introduced into the Markandeya tank and other selected water areas.

**Development  
of fisheries**

In order to develop the fisheries in the district in a phased manner, the Directorate of Fisheries in Mysore has created two separate divisions with headquarters at Bethamangala and Chikballapur. Under the technical guidance of these divisions, the major tanks and reservoirs are being exploited by improved methods of fishing, *i.e.*, by nylon gill nets, using coracles. The principles of co-operative efforts have been applied in the sphere of fisheries by the establishment of Fishermen's Co-operative Societies at Bethamangala and Chikballapur. These societies have been formed to encourage and augment fishery activities and also to improve the socio-economic conditions of the fishermen. Financial help in the form of short-term and long-term loans is provided to fishermen to wipe off their old debts and to buy their own crafts and tackles.

The Fishermen's Co-operative Society, Chikballapur, was started in November 1960 and in 1966, it had 60 members and a share capital of Rs. 1,269 and the Fishermen's Co-operative Society, Bethamangala, which was established in 1961, had 59 members, with a share capital of Rs. 1,761 in 1966.

During the Third Five-Year Plan, an intensive development scheme was introduced in the Mulbagal Block, in order to fully exploit the fisheries resources in the minor tanks of the area. Carp fry was imported from Tungabhadra dam area and stocked in several selected watersheds. Fishery requisites are supplied to fishermen on a subsidised basis. In addition to this intensification scheme, an Applied Nutrition Programme has also been introduced in the district to bring 150 acres of water area under fish-culture by intensive stocking of quick-growing varieties like major as also common carps to exploit selected tanks in each established feeding centre and to distribute the fishes to nursing mothers and school-going children and to grant subsidies to village panchayats for proper renovations of tanks. The following table indicates some of the activities of the Fisheries Department in the district for four years from 1963-64 to 1966-67 :—

<i>Particulars</i>	1963-64	1964-65	1965-66	1966-67
Number of licences issued	580	361	459	378
Revenue realised	Rs. 3,929	2,156	2,963	2,164
Number of tanks auctioned	124	178	26	61
Revenue realised	Rs. 4,695	3,694	1,283	1,947
Fish catches	177 Kg.	948 Kg.	1,456 Kg.	914 Kg.
Revenue realised	Rs. 2,017	1,749	1,296	915

TABLE 1  
Statement indicating the quantities of modern fertilisers distributed in Kolar District and their approximate total costs  
from 1959-60 to 1966-67

		(In metric tonnes)							
<i>Item</i>		1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67
Ammonium Sulphate	.. ..	874	917	1,134	1,570	1,734	2,415	2,917	3,737
Urea	.. ..	114	234	351	482	696	1,130	2,500	2,972
Calcium Ammonium Nitrate	.. ..	..	451	492	895	1,322	2,155	3,214	3,874
Ammonium Sulphate Nitrate	.. ..	..	..	..	..	500	318	286	775
Super-Phosphate	.. ..	474	503	673	1,121	954	1,480	3,274	4,268
Potash	.. ..	17	19	34	62	49	140	261	476
Other	.. ..	152	200	294	327	426	538	575	674
Total	.. ..	1,531	2,324	2,978	5,057	5,681	8,176	13,037	16,776
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Approximate total cost of the above fertilisers.		5,35,500	9,93,000	11,31,000	20,21,000	22,72,000	32,70,000	61,16,000	85,34,000

Source : Office of the Deputy Director of Agriculture, Kolar District, Kolar.

TABLE 2

**Acreeage and Production of Food and Non-Food Crops in Kolar  
District for the year 1966-67 (Final Estimates)**

<i>Sl. No.</i>	<i>Name of Crop</i>	<i>Area in Hectares*</i>	<i>Production in Metric Tonnes</i>
1.	Paddy	22,297	31,434
2.	Ragi	1,15,809	89,225
3.	Bajra	10,483	3,033
4.	Maize	106	78
5.	Navane	2,277	913
6.	Haraka	4,024	1,613
7.	Save	9,458	3,794
8.	Other minor millets	1,931	774
9.	Tur	2,848	2,535
10.	Gram	20	10
11.	Horsegram	9,427	5,656
12.	Avare	3,756	2,629
13.	Other pulses	50	20
14.	Groundnut	22,924	12,043
15.	Castor	144	120
16.	Sesamum	1,117	520
17.	Rape and Mustard	43	23
18.	Sugarcane	4,718	3,23,907
19.	Tobacco	2,066	1,366
20.	Potato	4,018	10,437
21.	Onion	833	3,431
22.	Garlic	68	111
23.	Chillies	1,892	377

\*One Acre equals 0.405 Hectares.