CHAPTER IV

AGRICULTURE AND IRRIGATION

AGRICULTURE forms the important source of livelihood for most of the people of Bijapur district. The population of the district in 1961 was 1,660,178, of which 787,945 were workers and 872,233 non-workers. Of the former category, 594,901 persons (371,854 cultivators and 223,047 agricultural labourers) were engaged in agriculture, forming 75.5 per cent of the total working population. It will be difficult to trace the changes in the structure of the population actually engaged in agriculture over the last seventy years, since the methods of enumeration and occupational classification in the census reports of different years have varied. But some rough idea can be obtained in the figures of population given in the census reports under the heading "Rural" which include not only persons engaged in agriculture and allied occupations, but also those engaged in non-agricultural operations. These figures bring out the fact that, during the last seven decades, the increase in the rural population of the district has been less than that in the urban population. During the sixty years from 1901 to 1961, the district registered an increase of 83.83 per cent in its population. But the percentage of increase in the rural area was lower than the percentage of increase in the urban area, being only 73.53 per cent as against 146.79 per cent in the urban area. The distribution of population according to the 1961 census between rural and urban areas is 1,346,772 and 313,406, and the percentage that the rural population bears to the total comes to nearly 81 per cent. It can, therefore, be said that the main occupation of the people in the rural area is agriculture.

The annual and seasonal peculiarities of rainfall have their influence on the cultivation of the major crops of this district. The major portion of the year's rainfall is from the south-west monsoon, the contribution from the north-east monsoon being not more than 20 per cent of the total. About 97 per cent of the year's rainfall takes place between the months of April and November. The driest period of the year is from November to March. Temperature and other meteorological conditions are more or less uniform all over the district. The main seasons

follow the same pattern as in the other Deccan districts. The hottest months are April and May, though actually the summer commences in March and extends up to June. The mean daily maximum temperature in April and May is 101°F. The mean daily minimum temperature for the year is 68°F. Towards the end of February there is a change to summer conditions. The mean daily range of temperature is of the order of 25°F. between December and May. With the incursion of moisture, the range rapidly diminishes in June and during the rainy months the mean range varies from 15°F. to 20°F. It begins to rise again in November when it is about 23°F. Between December to May the average relative humidity is less than 30% and particularly in February and March it is about 20%; on individual days it can be as low as 10%. The period from December to March is characterised by clear skies. Cloudiness increases during April and May, although low humidity continues particularly in the afternoon hours. Thunderstorms occur during this period, partly relieving the heat but a storm is usually followed by dull, cloudy and peculiarly oppressive days.

In Bijapur district, all cultivable land comes under two categories—*jirayat,* which is dry crop land and the *bagayat,* which is irrigated land. The *jirayat* lands depend entirely on the monsoon. The *kharif* or the early monsoon season commences in June or July and terminates in September or October. It draws its rainfall mainly from the south-west monsoon and from the occasional pre-monsoon showers in April and May. The south-west monsoon usually starts during the second week of June and the prospects of *kharif* crops depend on the regularity of these showers. If widespread showers are not received at the right time, sowing operations may have to be delayed or suspended. A prolonged break in rains for a fortnight or more implies that the standing crops will suffer severely for want of adequate moisture in soil. The main *kharif* crops of the district are *jowar, bajra,* rice, maize, pulses, groundnut, sesamum, *ambadi,* chillies and vegetables.

The *rabi* season commences from the middle of October, and terminates in the middle of February though actually, the rainfall received during this period is very small. The *rabi* crops are brought to maturity by the occasional winter showers and the moisture retained in the soil during the *kharif* season. *Rabi jowar,* wheat, gram, safflower and linseed are mainly grown during this season. Sugarcane, vegetables, fruits and paddy are grown under irrigation to some extent. Rainfall being precarious, during the hot weather, water supply in the wells shrinks very considerably.

Soils

An analysis of Bijapur soils indicates that they are poor in organic matter constituents. The sand and silica content is very low ; this may be due to the high proportion of lime in these soils. The nitrogen content in these soils is also very low. There are two main classes of soil, the black soil or *yeri bhoomi* and the red soil or *masari bhoomi*. The major portion of the district consists of black soil which has a great moisture-holding capacity. When unmixed with any foreign matter it becomes very clayey in the rainy season, while in the hot weather it is deeply fissured. The first heavy rains carry the sun-dried surface film into these fissures so that without any labour, the upper layer of each is renewed partly year after year. The salt in the rich deep black soil of the Dhone valley is very nourishing to some crops, particularly to jowar and wheat. The soil needs ploughing only once in three or four years. A single heavy fall of rain is enough to give a fair crop. The red sandy soil is found chiefly near the sandstone hills of Badami, Bagalkot and Hungund taluks. It is generally poor, though under a proper system of manuring and tillage it yields fair crops.

The percentage of cultivated area to the total area in the district as a whole came to about 84 per cent in 1963-64. This percentage, of course, varies from taluk to taluk, the highest being in Muddebihal taluk, and the lowest in Badami taluk where there is the maximum forest area. Gross area irrigated was only 2.94% of the total cropped area. This clearly brings out the fact that agriculture in Bijapur is at the mercy of the monsoon. The forest area of the district was about 2,03,645 acres in 1963-64. The taluks of Bagalkot, Badami, Hungund, Mudhol, Jamkhandi and Bilgi have the largest forest areas accounting for 98 per cent of the total forest area of the district. The total geographical area according to village papers is 42,31,263 acres. Out of this, 35,58,164 acres were put to agricultural use in 1963-64, while the cropped area in that year was 36,33,319.

The table below shows taluk-wise break-up of extent of cultivated land in Bijapur district in 1963-64.

Taluk	*Area in acres*
Badami ..	2,27,102
Bagalkot ..	1,80,440
Bagewadi ..	4,40,723
Bijapur ..	5,35,894
Bilgi ..	1,48,600
Hungund ..	2,84,630
Indi ..	4,81,270
Jamkhandi ..	2,39,853
Muddebihal ..	3,38,005
Mudhol ..	1,99,671
Sindgi ..	4,81,976
Total for the district ..	35,58,164

The cultivable waste lands which were about 78,000 acres in 1957 were brought down to 26,900 acres in 1961-62. Their extent was further reduced to 21,742 acres in 1963-64. A detailed statement of agricultural land utilisation is given at the end of the chapter (Table-I).

Food crops

Bijapur district is mainly a foodgrains producing area. Roughly three-fourths of the total cropped area is under food crops. The main food crops of the district are jowar (*kharif and rabi*), bajri, wheat, paddy and maize. Under pulses, the main crops are Bengal gram, horsegram, greengram, *tur,* chavali, etc. Fruits and vegetables and spices and condiments are also grown. The Bijapur taluk has maximum area of more than five lakhs of acres under food crops. About 65 per cent of the total area under food crops in 1962-63 was in Bijapur, Indi, Sindgi, Bagewadi and Muddebihal taluks. Of the total area under food crops in this district, the area cultivated in the *kharif* season was about 38 per cent. The percentage of area under the rabi food crops was 62.

Non-food crops

The percentage of area under non-food crops in the district was about 22 in 1962-63. The main non-food crops are groundnut, sesame, linseed, safflower, castor, niger, cotton and Deccan hemp (ambadi). There is a very small area under tobacco and betel leaves. Four tables giving the acreage under different crops from the year 1954-55 to 1962-63 are appended at the end of the chapter (Tables II to V).

Cereals

Paddy (Oryza sativa)–Kannada name, *Bhatta*—is a minor crop in the district and is grown mainly in patches in areas under the command of wells, tanks, lift irrigation schemes, etc. It is also grown in the low-lying areas and in the pockets of bunds. The area covered under this crop in this district was only 12,720 acres during 1961-62 of which about 5,000 acres were irrigated. It increased to 13,218 acres in 1962-63 and to 14,778 acres in 1963-64. The local names of paddy grown in this district are *kumkum nellu, kari nellu, bile nellu, dam or dodbhatta, javari kemp nellu, didag bhatta and vana bhatta.*

The approximate number of days required for maturing of this crop is one hundred, but there are variations in regard to particular varieties; *vana bhatta,* for example, takes 140 days and *kumkum nellu* and certain varieties take 120 to 130 days. The yield per acre varies from about 640 lbs. to 800 lbs. The *didag bhatta* variety yields about 1,280 lbs. to 1,444 lbs. per acre. A statement showing standard and average yields of principal crops is given at the end of the chapter (Table VI). In areas where paddy is grown under irrigation, fairly normal yields are obtained, while under rain-fed conditions the yield is uncertain. Paddy is sown in June-July and harvested during November-

December. The land is prepared by ploughing and harrowing. Farm-yard manure is applied after ploughing. The sowing of seed is done with a seed drill. No transplanting of paddy is done in this district. The seed rate per acre is between 30 to 40 pounds. Interculturing is done twice or thrice with slit and entire blade hoes. Ripe paddy is harvested with a sickle and stacked. The Japanese method of paddy cultivation is followed in the area irrigated mainly by the Mamadapur and Kendur tanks. The extent of that area is about 165 acres.

Rice is not, however, the main staple food of the inhabitants of this district. It is only during festivals and ceremonial occasions that it is used both by the rich and the poor. Only persons belonging to the upper middle and the upper classes use rice often as a part of their food. Rice is also being used for preparing *churumuri, murmura, avalakki, dosa,* etc.

Wheat

Wheat (Triticum satirum) -*godi*-is late or cold weather crop in this district. It is sown generally in the months of October and November and harvested during January and February. *Khapli* wheat is sown under irrigation in parts of Indi, Sindgi and Bijapur taluks during December and January and harvested in March and April. The acreage covered by the wheat crop in 1961-62 was just over 1,97,394 acres. It was 2,20,226 acres in 1962-63 and 2,03,381 acres in 1963-64. Wheat is grown generally in all the taluks of this district, but the biggest acreage is in Bagewadi taluk. The seed is sown with a three coultered drill. The seed rate varies betwen 30 to 40 lbs. per acre in case of dry wheat and between 60 to 80 lbs. per acre for wheat cultivated under irrigation. Generally, no interculturing is done after sowing except in years of heavy rainfall. The local varieties of wheat are the red and the white, which are now being replaced gradually by improved strains which are resistant to rust. The average yield per acre varies from about 350 lbs. in dry farming to 1,500 lbs. in irrigated farming. Wheat is generally used for preparing *bread, chapati, puri, holige, kadabu, ladu,* etc. *Khapli* wheat is used only for preparing *chapati* and *rava.*

Jowar

Jowar (Sorghum valgare).—*jola*—is the main staple crop of the district, and is grown widely in all the taluks, the total area being 17,27,695 acres in 1961-62, 18,13,903 acres in 1962-63 and 17,90,226 acres in 1963-64. It is the most economic crop, since it yields good grain and palatable fodder for the cattle. It is most suited to the black and medium soils of this district and can be grown conveniently within the amount of rainfall received. Jowar is grown principally for grain purposes, both during the kharif and rabi seasons. Kharif jowar is grown mainly in the southern taluks of the district, the highest acreage being in Hungund taluk. Rabi jowar is also grown widely though the largest acreage is

to be found in Indi taluk. This is a drought-resistant crop and thrives well under well-distributed rain. About two to three inches of rain prior to the emergence of earheads is very beneficial, while rain during the flowering and seed formation stages is harmful. Kharif jowar called *mungari jola* is sown generally during June-July. Two or three harrowings are given prior to sowing. This kharif crop is not grown as an entire crop, but as a mixed crop with green gram, niger, sesamum and tur. Farm-yard manure is applied not more than once in three to five years to jowar land. Harvesting is done during January and February. The yield of the crop varies from 400 to 700 lbs. per acre under dry conditions and up to about 3,000 lbs. under irrigation. The yield of fodder varies from 2,500 to 3,000 lbs. per acre. Rabi jowar, the mainstay of the Bijapur district, is the largest single crop grown. This rabi jowar is also called *bili-jola* and is sown generally in September and October in the black and medium soil and also in alluvial soils. One or two ploughings with wooden plough are done during the rainy season, followed by two or three harrowings. Sowing is done during September-October with a three-coultered seed drill, the seed rate varying from four to five pounds per acre. Two interculturings are given with slit-hoes. Harvesting is done during February-March and sometimes even in April. The average yield per acre varies from 200 to 400 lbs. and in exceptional cases the yield goes up to 700 lbs. per acre. The yield of fodder per acre is between 2,000 to 2,500 lbs. The local varieties of rabi jowar are *gund, belasi, seetani jola,* and *chouri jola.* The Department of Agriculture has recently introduced an improved strain called maladandi jola which has now spread to quite a large acreage in the district. This new variety has great resistance to drought and naturally, therefore, it has become quite popular in the district. Jowar is used chiefly for preparing bread which is the main daily food of the poor and the middle class people. It is also parched and eaten. Rabi jowar earheads are parched in the milky stage and eaten.

Bajri or Bajra

Bajri, (Pennisetum typhoidem) also called *Sejji,* is also a major food crop in Bijapur district. The area under this crop was 5,29,307 acres in 1961-62, 5,35,974 acres in 1962-63 and 5,40,937 acres in 1963-64. It requires a dry climate and light showers of rain with plenty of sunshine between the showers. This crop is very accommodative and can grow even in areas where the rainfall is not even 10 inches, provided that rainfall is evenly distributed. Rain at the time of germination, flowering, and harvesting is very harmful and the yield is considerably affected. To avoid such a contingency, the crop is sown between late July and the middle of August. It is mainly a kharif crop and, though sown later than *Kharif jowar,* is harvested a little earlier. In good soils, the growth of bajri is luxuriant, while in poor soils it is moderate. Land is prepared by ploughing once or twice, and harrowed twice

or thrice before sowing. Manuring is done once in three or four years. Sowing is done with a three-coultered drill. Bajri is not grown as an entire crop but as a mixture with green gram, *tur, kulthi,* sesamum and niger. Two or three inter-culturings are given after sowing. The grain ripens at the end of October or in November, when it is reaped with a sickle. Bajri is a three-month crop. It is grown predominantly in Bijapur, Indi, Sindgi and Hungund taluks. The yield of bajri when grown as a mixture crop varies from 300 to 500 lbs. per acre and the yield of fodder is about 800 to 1,000 lbs. per acre. Bajri is used for preparing bread and is the daily diet of the poor, till at least the rabi crops are harvested. It is usually consumed only during winter. The rich cultivators feed their cattle with boiled bajri grains.

Maize

Maize (Zean ays) is called *Govin jola or Gonjola* in Kannada. The total area under the crop was 5,923 acres in 1961-62, 5,737 acres in 1962-63 and 6,520 acres in 1963-64, the highest acreage being in Jamkhandi taluk. It is grown both as kharif and rabi crop. Land is ploughed and harrowed once or twice and seeds are sown at the rate of 6 kg. per acre. It is a three-month crop and is cut and fed to cattle before maturity. The grain yield varies from 500 to 1,000 lbs. per acre. When grown for fodder, the yield of green matter varies from 15,000 lbs. to 25,000 lbs. per acre. Maize grain is very nutritious, containing a very large quantity of fat. Its cobs are parched and eaten by the rich as well as the poor. The green fodder is excellent, being very sweet, and is fed green or as silage.

Millets

Millets like *Ragi, Kodra, Vari Sava* are minor cereals in this district and occupy a very small acreage. They are grown mainly on the slopes of hills in light, poor soils of shallow depth. They are sown usually in June and ripen generally in November, yielding about 300 to 500 lbs per acre. Ripe grain is usually used for preparing bread after being ground into flour. This flour is also made into a cooling drink called *ambli.* The area under other cereals and small millets was 9,770 acres in 1962-63 and 21,252 acres in 1963-64.

Pulses

The total area in this district under pulses was 2,10,657 acres in 1961-62, 2,08,839 acres in 1962-63 and 2,02,426 acres in 1963-64. The largest area is in Bijapur taluk and the acreage in Bilgi is the lowest. About 50 per cent of the total area under pulses is occupied by Bengal gram (*Kadale*) and tur (*Togare*).

Bengal gram

Bengal gram (Cicer aria tanum)–Kadale–is one of the most largely grown pulses in this district and is a major rabi crop. It is grown in almost all the taluks along the banks of rivers and *nalas* and also in tank beds. It is also grown as a mixed crop with rabi jowar. Sowing is done between October and December

while harvesting is completed between January and March. The usual seed rate per acre varies from 40 to 50 lbs. and the average yield under dry conditions varies between 400 to 600 lbs. per acre, while, under irrigation, the figure may rise to about 1,200 lbs. per acre. It is a common practice to pluck off the tops of the shoots before flowering in order to render the plants bushy and increase the out-turn of crop. Extreme cold is harmful to this crop and frost is fatal. The plant has several uses. Both the foliage and the green grains are used as vegetables. The grain when ripe is dried and used as *dal* and is an ingredient in many types of dishes used daily. It is also a good food for the horses. The plant yields a type of vinegar called *kadale-huli*. A new type of gram introduced by the Agricultural Department is the Chafagram, which is wilt-resistant and high-yielding. The area under Bengal gram was 45,277 acres in 1962-63 and 43,236 acres in 1963-64.

Green gram

The area under other pulses, which include green gram, horse gram, cow-pea, alasandi and batagadale, was 1,07,568 acres in 1962-63 and 99,848 acres in 1963-64. Green gram (Phaseolus mungo)—*hesaru* or *mug*—is grown in almost all the taluks of the district, the highest acreage being in Sindgi taluk and the lowest in Jamkhandi taluk. The total acreage under green gram in the district was reported to be about 30,000 acres. Generally it is sown as a mixed crop with kharif jowar or bajri during June and July and is harvested during September and October. It does not require any manuring or irrigation. The normal yield is about 200 to 450 lbs. per acre. An early type of hesaru called *utavali hesaru* or *kombhesaru* is taken in black soil in the kharif season as a first crop in early June and is harvested by the middle of August, thus enabling the farmer to take a second crop of rabi jowar or wheat. *Mug,* like other pulses, can be eaten green as vegetable and as a split *dal.*

Tur

Tur (Cajanus indicus)—*Togare*–is one of the most important pulse crops in this district with an area of about 62,238 acres in 1961-62, 55,994 acres in 1962-63 and 59,342 acres in 1963-64. It is sown generally as a mixed crop in June and July along with kharif jowar and bajri. It grows also in well fertilised soils. It is a very hardy crop and resists drought to a remarkable extent. Tur is harvested during the months of February and March. The plants exhibit a very slow growth till the main cereal crop is harvested, and after that the plants grow vigorously. The yield varies from 200 lbs. to 400 lbs. per acre when grown as a mixed crop. The green pods of tur are eaten as a vegetable. The ripe pulse is split up into dal and eaten in a number of ways. It is taken generally in boiled form and sometimes mixed with vegetables.

Horse gram (*hurali* or *kulthi*) covered an area of about 51,000 acres in 1963-64, the highest acreage being in Bijapur taluk. It is sown in June and July as a mixed crop with a seed rate of about 40 lbs. per acre. The crop ripens by October or November. The yield varies from 300 lbs. to 500 lbs. per acre in good soils, and in poor soils the yield varies from 150 to 300 lbs. per acre. The green crop is used as fodder for cattle and sheep. The pulse is given to horses and cattle after boiling. It is also used in preparing soup and porridge. **Horse gram**

Madiki (*matki* or *math*) is grown in shallow black or light stony soils where kharif jowar and bajri are taken as main crop. It is sown usually in June and July and harvested in October and November. The yield per acre varies from 200 lbs. to 400 lbs. and that of fodder from 800 lbs. to 1,000 lbs. Madiki is used as a split pulse and also ground into flour for mixing with others. It is eaten parched or boiled whole with condiments. It is also given to horses and cattle and is said to form a fattening diet for them. **Madiki**

Avare (Dolichos lablab)—*Val*—is a minor crop in this district. It is a rabi crop and grown along the banks of rivers as a fodder crop from which grain is also taken. The seed rate per acre varies from 50 to 60 lbs. It is also taken as a mixed crop with Bengal gram and *rabi jowar*. Sowing is done from November to January when the crop is cut and fed to cattle from March to May. Generally, pods are plucked as the crop goes on maturing. The pulse is used for consumption as vegetable and split grain. **Avare**

Alsandi (Vigna catiang)-*chavali*-grows as a minor crop in this district. It can grow in a variety of soils. It is a creeper with a pod of about five to six inches long containing dark seeds. The seed rate per acre is about 30 lbs. if sown alone and the yield amounts to about 40 to 50 times that of the quantity of seed sown. In mixed cultivation, the yield is about 100 to 150 lbs. per acre. It is used as vegetable and when dried, the grain is split for consumption. **Alsandi**

Batagadale (*watana*) is mainly a rabi crop. The acreage under this pulse in this district is under a thousand. It is sown in October and November at the rate of 20 to 25 lbs. per acre and the crop is ready for harvest after four months. The yield is between 300 to 400 lbs. per acre. It is used as green vegetable and cooked in various ways. **Batagadale**

Groundnut (Arachis hypogea)—*Senga or Nelagadale*— is the foremost oilseed crop, being extensively grown in all taluks. The area under groundnut was 3,19,353 acres in 1961-62, 2,56,504 acres in 1962-63 and 2,57,509 acres in 1963-64. The popularity of this crop is due to the great demand for groundnut and the good price it fetches. It can be grown both in *maradi* and *masari* types of **Oil-seeds**

soil. Sindgi taluk has the largest acreage. Sowing of groundnut is done in June and July and it thrives well in the light sandy soil that is found in Badami taluk. In the case of the spreading variety, the seed rate is about 40 to 50 lbs. per acre, while in the case of the erect variety , it is about 80 lbs. Both these varieties are grown in this district, about 80 per cent of the area being under the erect variety and the rest under the spreading variety. Ploughing and harrowing is done before sowing and two or three interculturings are given, with one weeding, if necessary. Flowering starts after about two months of sowing and the crop is ready for harvesting in about four months. Harvesting is done by uprooting the plants or by harrowing with a short blade harrow. Groundnut is raised generally as a dry crop in kharif season. The early variety of groundnut generally yields about 800 lbs. of pods, though at times, it goes as high as 1,500 lbs., while the late varieties yield from 1,000 lbs. to 1,700 lbs. per acre. The Department of Agriculture has evolved two new strains of the erect and the spreading variety. These are the Spanish Improved and Pondicherry-8. They have the qualities of drought-resistance, high yield, earliness of maturity, higher oil content and therefore have become quite popular. Groundnut is cultivated mainly for oil. It is also consumed in several ways and eaten raw, cooked or boiled or used in confectionery. The seed yields good undrying edible oil, which is used in cooking and in the manufacture of vanaspati, soap, lubricating oils, etc. The oil does not become rancid easily. This may be one of the reasons why it has been introduced in the Indian Pharmacopoeia as a base for ointments. Groundnut cake is used for cattle feeding and manuring purposes. The oil in kernels comes to about 40 to 50 per cent. The leaves and branches of the plant form excellent and nutritious fodder, conducive to an increase in the milk yield of cattle. Growing of groundnut during summer is becoming popular especially in the area irrigated by wells and tanks.

Sesame (*Ellu*) is grown all over the district as a mixed crop. Indi taluk has the highest acreage and Jamkhandi taluk has the lowest. It is sown in the months of June and July along with kharif jowar or bajri and harvested in November. The seed rate varies from one to three pounds per acre, while the yield varies from 250 to 350 lbs. per acre. The seed is used for sweetmeats and is also used for funeral rites. It yields abundant oil which is used both for cooking and medicinal purposes. The oilcake is a much prized cattle food. Three varieties of sesame—white, red and black—are grown. The white variety grows earlier and is the richest in oil content. The area under this crop was 9,695 acres in 1961-62, 11,855 acres in 1962-63 and 9,784 acres in 1963-64.

Rape seed is a minor crop in this district and is grown mainly in Hungund taluk. The oil content in the seed is about 35% and

it is used for eating purposes and also for lamps, etc. The oilcake is very useful as manure.

Safflower (*Kusabi*) is the second largest oilseed crop in Bijapur district with an area of about 80,000 acres in 1961-62, 62,631 acres in 1962-63 and 61,465 acres in 1963-64. Bijapur taluk had the highest area, while Bilgi taluk had the lowest in 1963-64. It is grown in the black cotton soils and always as a mixed crop. It is also grown as a border crop since the spiky leaves of the plant do not allow stray cattle to enter the fields. It is generally sown along with rabi jowar and wheat from September to November and is harvested in March and April. When the crop is about two months old, the tops of the plants are cut off to encourage branching. The plants are pulled out in the early dusk of the day and after drying, the seeds are thrashed by beating with sticks. About 100 lbs. of yield per acre are obtained from the mixed crop and about 400 lbs. to 600 lbs. if the crop is sown alone. The oil obtained from the seed is about 17 to 32 per cent, and is extensively used in cooking. The stalks have no value but the young leaves are boiled and eaten as vegetable. The oilcake is used as food for cattle and for manuring purposes. The flowers are deep red in colour and are used sometimes for dyeing purposes.

Linseed (*Agase*) is the foremost non-edible oilseed crop with an area of about 23,618 acres in 1961-62, 25,657 acres in 1962-63 and 24,470 acres in 1963-64. Bagewadi taluk had the highest acreage. It is grown in black cotton soils as a mixed crop with wheat or a border crop since cattle do not touch the linseed plant. Sowing is done in September or October and harvesting is completed by February. The seed rate is about 10 lbs. to 12 lbs. per acre. As the seeds have a tendency to shed easily, the plants are uprooted when the capsules are just ripe and begin to open. A good crop yields about 300 to 400 lbs. of seed per acre. Linseed is mainly an oilseed crop in this district and is not of much value as a fibre crop. The seeds yield about 40% of oil. Both the oil and oilcakes contain a high percentage of phosphorus and potash. The oil is used in the manufacture of paints and the cake is a good cattle feed.

Castor (*Haralu*) is a minor crop. It is both a kharif and rabi crop. It is taken mainly as a border crop in garden lands and also along the bunds of the fields. Two types of plants are grown—annual and perennial. The annual varieties are sown in the fields and the perennial varieties are taken in garden lands. The kharif crop is usually sown in June-July and harvested in December, and the rabi crop is ready for harvest by February. An average crop yields about 300 lbs. to 400 lbs. of seed per acre. Castor oil is used for burning lamps and for lubrication. It has also a good demand in soap industry and

for medicinal purposes. Mixed with perfumes, it is used as hair oil. The oilcake is used as a manure and the leaf is eaten by cattle. The roots of the castor plant when dried are used as a febrifuge. The undecorticated seeds contain about 40 to 50 per cent of oil. Small seeds contain more oil than the large ones. In 1961-62, only 540 acres were sown with this crop. The area under this crop was 375 acres in 1962-63 and 680 acres in 1963-64.

Nigerseed (*Gurellu* or *karellu*) occupied an area of 802 acres in 1963-64. It is grown in shallow, black and all other kharif soils, as a mixed crop with kharif jowar or bajri. It is sown in June-July and harvested in November and the yield per acre comes to about 250 to 400 lbs. A clear, limpid, pale yellow sweet oil is extracted from niger seed and is used largely for culinary purposes. The residual oilcake is black in colour and uninviting in appearance, but it is considered to be one of the best oilcakes for milch cattle.

There are possibilities of stepping up the production of oil seeds in the district by intensive and extensive methods. A sum of Rs. 3.60 lakhs was provided for producing 29,000 additional tons of oil seeds in the district, during the Third Five-Year Plan.

Narcotics

Tobacco (Nicotiana tabacum)—*Tambaku*—is grown in all the taluks of the district in very small patches, the total acreage in the district being 328 acres in 1961-62, 366 acres in 1962-63 and 214 acres in 1963-64. Seedlings are first raised in seedbeds and when they are about six weeks old, they are transplanted in the field. Alluvial type of soil is best suited for this crop. About 360 square feet of seed bed area are sufficient for transplanting in one acre of tobacco crop and about four ounces of seed are required for this purpose. The plant is not allowed to flower and all buds and branches are nipped off as they appear and only 8 to 12 leaves are allowed to remain. The plants are cut in January or February about four inches high from the ground and spread in the sun till they are thoroughly dry. Then they are sprinkled with water and while damp, are closely packed in a pit or stacked under weights and covered for eight days during which period fermentation sets in. When taken out from the pit the leaves are packed in bundles and sent to the market for sale. Tobacco is smoked and chewed by all classes of people. It is also used as snuff. Under dry conditions, the yield is from 600 lbs. to 800 lbs., while under irrigation it rises from 1,000 lbs. to 1,200 lbs. per acre. The yield of beedi tobacco varies from 400 to 500 lbs. per acre.

Betel leaf

Betel leaf (*vilyadele*) is a perennial garden crop and is largely grown in Bagewadi, Badami and Bijapur taluks. The crop lasts for about 15 to 20 years, and each garden is of about one acre of land. The soil suited for this crop should have good depth and be well-drained, fertile and of the alluvial or clayey type. Cool, moist and shady conditions are required.

The shade for this crop is provided by the trees on which the vines climb. The crop needs an abundant supply of water. In order to support the vines, trees like *shevri, pangara, hadga* and *shevga* which are quick-growing are planted. The whole garden has to be sheltered from wind and sun by high hedges or screens of grass or mats. The vines begin to bear in the third year, but are at their best from the fourth to the thirteenth year and under favourable conditions go on yielding till the twentieth year. Every year, in March, April and May, the upper half of the vine is coiled away and buried above the root under fresh red earth and manure. Portions of the garden are thus treated in rotation so that those first cut are ready to bear before the last are cut. The cultivation of betel leaf is very costly and requires careful attention throughout the year but it pays good dividends since it is a very remunerative garden crop. The betel leaf of Kudgi in Bagewadi taluk has a reputation for quality and is exported outside the district. Cholachgud in Badami taluk is also well known for betel leaf. The leaf is chewed with arecanut, lime, catechu and sometimes with tobacco. The leaf is reported to have digestive properties, and sweetens the breath. Modern medical research shows that the leaves are rich in vitamins B and C. The area under this crop was 75 acres in 1961-62, 93 acres in 1962-63 and 55 acres in 1963-64.

Sugarcane

Sugarcane (Saccharum officinarum)—*Kabbu*—is a perennial crop and is grown under irrigation in black soils having good depth and good drainage. It is a twelve-month crop and hence is grown in areas, where there is copious supply of water under wells and tanks and on lift irrigation sites. The land is ploughed across two or three times and manured sufficiently with compost or farm yard manure. Nitrogen is also given in the form of oilcake. The cane sprouts about a month after planting. Sugarcane is eaten either raw or is made into jaggery or sugar. Only the local variety called pundy is grown, since it is soft cane and is used for chewing and extracting juice for drinking. Improved varieties are now being introduced and the yield of cane varies from 25 tons to 35 tons per acre in this district. The total area under sugarcane in this district was 3,491 acres in 1961-62, 3,170 acres in 1962-63 and 5,070 acres in 1963-64. Sugarcane is a crop which exhausts the soil and therefore, it is not grown year after year but rotated with food crops.

A new sugarcane developmet scheme has been launched in the district. A varietal survey was conducted and the most popular variety was found to be CO 419, covering over 71 per cent of the sugarcane area. Other local varieties such as Pattapatti and Pundy are also grown on a small scale. Out of all the plantings, the regular planting i.e., of the period from December to March was observed to be in the maximum extent of area; it covered about 60 per cent of the sugarcane area. A survey of pests and

diseases attacking the sugarcanes was also carried out. Seed nurseries have been organised and seed material is being distributed to the cultivators for raising tertiary nurseries.

Compost-making in an improved way by utilising sugarcane trash has been popularised among the sugarcane-growers and it was estimated that about 655 tons of compost was available from this source during the year 1964-65. More than 3,000 tons of inorganic manures were also distributed during the same year. Under the local manurial resources scheme, sannhemp seeds are distributed free. Demonstration plots for the various phases of sugarcane cultivation are laid out to help the farmers to adopt better methods. The Third Five-Year Plan has a target to bring under sugarcane cultivation 3,000 additional acres of land.

Condiments and spices

Chillies (Capsicum annum)-*Menasinakai*-forms an important condiment crop in this district covering an area of about 7,151 acres in 1961-62, 6,281 acres in 1962-63 and 5,860 acres in 1963-64, fifty per cent of which was in Bijapur taluk alone. The Indi taluk accounted for 1,322 acres in 1963-64. Green chillies are marketed as vegetable. It is grown under irrigation in patches under the command of wells and it requires a well-drained fertile soil. Three months after planting, it begins to bear fruit. The yield of irrigated chillies goes up to 1,500 lbs., per acre. Only two varieties are grown in the district, the *lavangi* which is small in size and another which is longer. Chillies are eaten both green and dry by one and all and form an essential ingredient of the human diet.

Turmeric (*Arishina*) was grown in an area of 45 acres in 1961-62, 64 acres in 1962-63 and 51 acres in 1963-64. The Bijapur taluk has the highest acreage with 41 acres in 1962-63 and 27 acres in 1963-64. Its root is of universal use as a condiment. It is also used as a paint and a dye.

Coriander (*Kothambiri*) is grown in vegetable gardens only as a vegetable. It grows any time of the year. The leaves are ready for use in about three weeks after planting. For seed purposes it is grown in July and is ready for harvest in about two months. The ripe seed is one of the most popular condiments. The seed rate is about 6 lbs. per acre and the yield comes to about 1,000 to 1,500 lbs per acre.

Garlic (*Bellulli*) covers an area of about 600 acres in this district, three-fourth of which is in Bagewadi taluk. It is grown in well-drained black soil under irrigation. Water is required every eight or ten days. Segments of garlic bulbs are planted usually in October and they mature in about five to six months' time. Garlic is used extensively in cookery. A good crop yields about 6,000 to 8,000 lbs. per acre. The area under coriander and garlic was 1,754 acres in 1962-63 and 1,468 acres in 1963-64.

Fibres—Cotton

Cotton (Gossypium herbaceum) is the most important fibre crop of this district, and the acreage is the highest in the State. The promulgation of the Bombay Growth of Food Crops Act of 1944 was responsible for a great diminution in the area during the years 1944 to 1949 when attention was paid mainly to the growth of food crops and the cultivation of cash non-food crops was frowned upon. But after 1949, the area under cotton began steadily to rise and in 1961-62 the total area was 4,40,540 acres. It was 4,34,128 acres in 1962-63 and 4,54,349 acres in 1963-64. Commercially the cotton grown in Bijapur district is of two varieties, the Bagalkot Jawari and Bijapur Jawari. That grown in the areas lying between the Krishna and the Bhima rivers is called the Bijapur Jawari, and the cotton grown south of the Krishna is known as the Bagalkot Jawari. The main varieties of cotton grown under dry conditions are the Jayadhar and Laxmi varieties. Besides these varieties, the Department of Agriculture has introduced the Jarilla and Co^2 which are grown to a small extent under well irrigation. Jayadhar and Laxmi cottons are grown as semi-rabi crops. The Laxmi cotton is definitely superior in quality and fetches better price. Consequently, the area under this type of cotton is being increased steadily in this district year after year. Cotton requires soaking rain in July, followed by moderate rains, alternated with sunshine in August and again heavy rains in the latter part of September. Rain after October is not desirable. The desirable optimum temperature is between 60° to 100°F. during the period of growth of the crop. All these conditions are prevailing in the district and hence the cotton crop has always good prospects. Cotton is grown mainly in rich black soils. Medium and lighter types of soils, if they are well-drained, also give satisfactory yields. Land for cotton is prepared generally by ploughing, the depth of ploughing being restricted from 3 to 6 inches. First ploughing is done after the fall of one or two ante-monsoon showers in April and May. During the early part of the rains, the land is simply harrowed once or twice and the stubbles of the previous crops are removed. Cotton seed is sown at the rate of 10 to 15 lbs. per acre during the months of August or September, depending on the nature of soil and rainfall conditions. In the case of Mungari irrigated cottons, sowing is done in May or June. Before sowing, the cotton seed is passed through a sieve to facilitate removal of small, broken and immature seeds and thereafter plastered with cowdung to facilitate easy and regular dropping of the seeds in seed tubes or bowels. Adequate moisture in the soil is absolutely necessary to carry out the sowing operation successfully. The usual method of sowing is to drop the seed in the furrows of the drill through bamboo tubes. The seed is immediately covered by a light harrow after sowing. As a rule, cotton is grown as an entire crop. Three to four interculturing and a weeding are generally given. Where it is grown as a mixed crop, the rotation that is followed is either a two years' course of Jowar and cotton, or a three years' course of Jowar, cotton, wheat or kulthi.

Under normal conditions, the cotton sown in the months of August and September, flowers in November and December. The development of bolls may be hindered at times due to deficiency of soil moisture. Opening of bolls permanently is not uncommon in this district due to a sudden rise in temperature during the months of January and February. These factors seriously affect the quality of the cotton, the staple becoming shorter and losing its strength. The crop is ready for harvest in February and March, giving an average yield of 150 to 200 lbs. per acre. In the case of kharif irrigated cottons, the crop will be ready for harvest during the months of October and November and the average *kapas* yield per acre will be anywhere between 1,000 to 1,200 lbs. Three to four pickings in all are taken and each picking is done at an interval of 8 to 12 days. The cultivators generally dispose of their produce in the form of seed cotton to the petty merchants either at their own doors or bringing the same to the commission agents in the nearest market place. The commission agents and the petty merchants usually get their *kapas* ginned at the factories in the mofussil areas and bring only lint for sale to the nearest marketing place. The number of uses to which cotton is put is large. It is used to spin yarn and weave cloth. Cotton stalk is used as fuel and the seed as a cattle food and also for extraction of oil. Seeds of American types are specially suited for the extraction of oil.

Diseases of cotton

The most general diseases of cotton found in Bijapur district are wilt and root-rot, which are considered the major infections which cause considerable damage to the crop. Most of the indigenous varieties are susceptible to these two diseases. Of the remaining diseases, red leaf blight and black-arm are the only diseases of any importance; these diseases attack only the American varieties and are of sporadic occurrence. The extent of damage caused by wilt is quite considerable, the losses varying from 40 to 60 per cent. The causative organism of this disease is soil-borne and extremely persistent, so that it is found difficult to exterminate it once the soil becomes infested. The ultimate solution to the problem of control of wilt disease would seem to be the production of varieties of cotton resistant to these diseases. The *Fayadhar* variety of cotton which has now been evolved is a 100 per cent wilt-resistant variety and is now gaining great importance in all cotton-growing areas of the district. Root-rot is caused by soil-borne fungus. So far, no effective remedial measures have been evolved and no variety of cotton resistant to root-rot has yet been evolved. Nevertheless, measures to control the disease are being tried through variation in the date of sowing and also mixed cropping. Red leaf blight is a physiological disease commonly noticed on American types of cotton and when the attack is severe, the yield is very much reduced and is of very poor quality. High humidity and cloudy days accompanied by low temperatures have been reported to increase the incidence of red

leaf blight. Sulphur-dusting has been advocated as a control measure. Black-arm is said to be seed and soil-borne. Research in respect of control measures has been in progress for quite sometime and seed treatment after delinting is being advocated and adopted.

The opening of the Agricultural Research Station in Dharwar in 1904 saw the beginning of research work in the improvement of the cottons of this area. A selection from the local *kumpta* variety was ready by 1913, and this was distributed in Bijapur district widely. In 1917, two other selections were distributed. A sub-station at Gadag was opened in 1908, and a new strain called the *vilayati* was given for distribution. It was in 1937 that the strain called *jarilla* was imported from East Khandesh into Bijapur district and this is now grown on a large scale under irrigation. Subsequently, the variety known as *jayadhar* was ready for distribution and was released in 1950. Amongst the most recent developments pertaining to cotton in this district are that the Jayawant and Gadag No. 1 have been replaced by Jayadhar and Laxmi, with a new strain called *virnar* evolved in 1950 being tried in Bijapur district under irrigation, and that two new strains pertaining to the Rajapalyam variety are now being grown under irrigation in a limited area. A cotton station has been recently opened at Bagalkot and the work of evolving suitable strains which are wilt and drought-resistant is being continuously carried on and it is hoped that before long the common diseases of cotton will be eradicated. For development of cotton production in the district, a provision of Rs. 9.18 lakhs has been made in the Third Five-Year Plan.

Jute

Jute occupies a very insignificant area in this district, being found only in small patches in Jamkhandi Taluk.

Sannhemp

Sannhemp (*Sanabu*) is grown mainly in Sindgi taluk. It is also grown as a green manure crop in garden lands or in areas under the command of lift irrigation sites. It is sown early in June. It is a quick growing plant and is ready for being ploughed back into the field in about 2 to 2½ months. At this time, the weight of the green matter is the maximum, about 10 to 12 tons per acre. A heavy log roller is drawn over the crop in order to level it and then it is ploughed in. The field so treated is left undisturbed until the sannhemp is decayed, which will take about five to six weeks. The seed rate when sown for the production of fibre is about 60 to 100 lbs. per acre. The crop gets ready for harvest after about four to five months, and the yield of fibre on an average is about 400 lbs. per acre.

Deccan hemp

Deccan hemp (*Pundi or ambadi*) covered an area of about 3,000 acres in 1961-62, 4,828 acres in 1962-63 and 3,569 acres in 1963-64, Sindgi taluk having the maximum area of 2,092 acres in

1962-63 and 1,386 acres in 1963-64. Pundi is a kharif crop and is grown with kharif jowar and bajri as a mixed crop. The fibre obtained from the crop is in great demand for household and agricultural consumption. If *pundi* is sown as an entire crop, the seed rate would be 30 lbs. per acre but in practice it occupies only about one-sixth to one-twenty-fifth of the total area under kharif crop. The crop is harvested when stalks are dry. After separating leaves and seeds, by beating with sticks, they are steeped in water and weighted down by stones for a period of ten to fifteen days. The bark and fibre become loose and are easily peeled off in long strips from the stem. Clean fibre is obtained by beating and washing the long strips. This fibre is then dried in the sun, tied in bundles and marketed. An acre of pundi crop if sown alone in good soil, yields about 10 to 12 Bengal maunds of fibre. It is turned into ropes, mats, etc. The sour young leaves of *ambadi* are sometimes used as a vegetable.

Sisal

Sisal (*Devva bale or bhutale*) is usually planted along the borders of the fields, bunds, and against the water courses in order to protect the field from erosion. The area in Bijapur district in 1961-62 was not more than 500 acres, though this fibre occurs in a scattered form all over the district along the railway tracks, canal embankments and gardens. It also serves as a hedge plant for the fields. The crop is propagated by suckers obtained from the mother plant and planted directly in the field. If bulbils are used they are planted in the nursery and after about a year they are transplanted. The fibre is obtained from the leaves after they become sufficiently mature. Generally, the sisal leaves are ready for harvesting when the plants are about 4 years old. The fibre is extracted either by the process of rotting or by the aid of a machine. It is used mostly at present in cottage industries and for manufacturing ropes, twines, mats, rugs, etc.

Fertilisers and Manures

During the year 1964-65, 2,700 tons of fertilisers were distributed through co-operative societies. In order to develop local manurial resources, the Third Plan made a financial allocation of Rs. 2.37 lakhs for the district, the target being to produce compost manure to the extent of 3.25 lakh tons in the rural areas and 29,000 tons in the urban areas. In the rural parts of the district, 21,318 standard pits have been dug, while there are 31 centres in the towns, for the purpose of manufacturing compost manure. In order to step up the supply of green manure also, sannhemp seeds and dhaincha seeds as also glyricidia cuttings and seedlings are being distributed to the farmers. Under the Third Plan, an extent of 7,000 acres was intended to be green-manured.

Use of better Implements

Iron ploughs are becoming popular in the district and are gradually replacing the wooden ones. Levellers (buck-scrapers) are now increasingly used. For purpose of bunding on a small scale, kenis are being put to use.In the irrigated areas, ridgers and

bund-formers are coming into vogue. For jowar-harvesting, stone-rollers are being popularised. In Jamkhandi and Mudhol taluks, which come under the Ghataprabha left bank canal area, contour irrigation implements are being increasingly preferred. During the year 1964-65, 415 dry-farming implements, 364 iron ploughs, 263 buck-scrapers, 78 bund-formers and 45 ridgers were supplied to the farmers. Over a lakh of rupees was provided in the Third Plan for supply of new agricultural implements on a hire-purchase basis in the district.

Improved strains

In the rabi season, an improved variety of jowar strain called M-35-1 is generally grown all over the district. In the kharif season, D-340 variety of jowar is becoming popular and is grown on a large scale. The Kenphad wheat has been now replaced by Bijaga Yellow and Bijaga Red. Chaffa gram, which is an improved variety, is being grown in the district. Groundnut of Pondicherry-8 variety has been recommended for growing in the Badami taluk. Hybrid maize has been found suitable for growing in the Jamkhandi and Mudhol taluks. Chinamug and bajra of Golgeri-1-8-5 variety have been recommended for growing all over the district. The various types of improved seeds are being produced at the seed farms located at Bijapur, Indi, Mudhol, Almel and Madarkhandi and distributed to the cultivators. During the First and Second Plan periods, about 38,700 Bengal maunds of improved seeds were distributed to the cultivators. A statement showing quantities of improved seeds produced in 1964-65 at the seed farms is appended at the end of the chapter (Table-VII).

Plant Protection

The Department of Agriculture helps the farmers to fight pests and diseases of plants, by organising plant protection campaigns. It obtains suitable chemicals and distributes them on a no-profit and no-loss basis or even below the cost price. During the First Plan period, seed treatment covering 2,31,082 acres of land was carried out and an anti-grasshopper campaign was conducted over an extent of 1,803 acres. During the Second Plan period, an extent of 12,77,811 acres of land was under seed treatment and 18,135 acres were treated with pesticides and 335 sets of plant protection equipment were given to the farmers at 50 per cent of the cost. For plant-protection purposes in the district, an amount of Rs. 3.60 lakhs was provided in the Third Plan. The local bodies in the district are coming forward to help financially purchase of insecticides and fungicides to control crop pests and diseases and generally to co-operate in the execution of various agricultural programmes.

Land Development

New bunding work extending to an area of 71,140 acres and consolidation of old bunding works over an area of 42,000 acres was done during the First Plan period at a total cost of about 29 lakhs of rupees. This measure of land development was con-

tinued during the Second Plan period for an area of over a lakh acres at a cost of nearly 36 lakhs of rupees. With a view to save the soil from erosion and to conserve moisture received during the monsoon season, a soil conservation scheme has been launched in the district. All agricultural lands having shallow medium and medium deep soils, except the area coming under the command of the Ghataprabha Left Bank Canal area, are covered by this scheme. For the Third Plan period a financial allocation of Rs. 47.60 lakhs was made for the purpose, the target of work being to carry out bunding over an area of 80 thousand acres of land. With a view to undertaking soil conservation by means of afforestation in the hilly areas and also to prevent erosion in waste lands, a sum of three lakhs of rupees has been set apart in the Third Plan and the area to be covered under this scheme is over 3,000 acres. Efforts are being made to evolve a suitable technique for conservation of deep black soils and to maintain the contour bunding works properly and to popularise the follow-on practices by dry farming methods in order to derive the fullest benefit. A table appended at the end of the chapter indicates the progress of bunding work done in the district since 1950-51 (Table VIII).

Reclamation of land

The Third Five-Year Plan has envisaged a large-scale reclamation of waste and fallow lands in the district, to the tune of about 25,500 acres. This work comes under the Tractor and Bulldozer Organisation Scheme which has been allotted Rs. 29.50 lakhs for the district in the Third Plan. For reclamation of the salt-affected areas in the Dhone valley in the Bijapur taluk and Mamatgeri in the Badami taluk, an amount of Rs. 2.16 lakhs has been provided in the Third Plan.

Farmers' Associations

In order to provide opportunities for mutual association and consultation and discussions of their problems and to promote co-operation, the District Farmers' Forum and Young Farmers' Associations have been formed in the district. The former organisation has now a new building of its own at Bijapur.

Panchayat Production Plans

With a view to encouraging collective efforts at increasing agricultural production, Panchayat Agricultural Production Plans have been formulated for the villages and these plans are in operation in most of the villages of the district.

Co-operative Farming Societies

As on 30th June, 1964, there were 12 co-operative farming societies with a membership of 489 and with share capital, reserve and other funds amounting to Rs. 29,932 in the district. The Department of Agriculture gives technical guidance to these societies in respect of control of pests and diseases, cropping programme and the like.

Crop Competitions

With the object of encouraging the agriculturists to put in their best efforts to get better yields, crop competitions are being

held at the taluk and district levels. The following tables, which embody the results obtained in such competitions held in 1964-65, are indicative of the possibilities of increasing the production in respect of different crops in the various parts of the district.

Yields as shown by Crop Competitions at district level (1964-65):

Village	*Taluk*	*Name of the crop*	*Yield per acre* kg. g.
Kotikal ..	Badami	Kharif Jowar	2,256—000
Chikmagi ..	Hungund	do	2,216—000
Galagali ..	Bilgi	Rabi Jowar	2,960—000
Krishnapur ..	Hungund	do	2,260—000
Buchangud ..	Badami	Groundnut	1,820—000
			Tonnes—kgs.
Nalatwad .	Muddebihal	Sugarcane	98—448
Dhavalgi ..	do	do	85—088
Terdal ..	Jamkhandi	do	75—500

Yields as shown by Crop Competitions at taluk level (1964-65):

Village	*Taluk*	*Name of the crop*	*Yield per acre* kg. g.
Kotikal ..	Badami	Kharif Jowar	2,256—000
Chikmagi ..	Hungund	do	2,216—000
Kagibilgi ..	Jamkhandi	do	1,568—000
Mantur ..	Mudhol	do	1,520—000
Sunag ..	Bilgi	do	1,040—000
Galagali ..	Bilgi	Rabi Jowar	2,960—000
Krishnapur ..	Hungund	do	2,260—000
Agarkhed ..	Indi	do	1,915—000
Otihal ..	Sindgi	do	1,880—000
Shirguppi ..	Jamkhandi	do	1,704—000
Konnur ..	Muddebihal	do	1,468—800
Yadhalli ..	Mudhol	do	1,440—000
Kulhalli ..	Jamkhandi	Wheat	700—418
Agarkhed ..	Indi	do	928—080
Yadahalli ..	Hungund	do	500—000
Madbal .	Sindgi	do	1,200—000
Metgud .	Mudhol	do	904—000
Buchangud ..	Badami	Groundnut	1,820—000
Muttagi ..	Bagewadi	do	1,400—000
Hunnur ..	Jamkhandi	do	1,276—000
Alagundi B. K.	Mudhol	do	1,272—000

Agricultural Research and Experimentation

Various steps are being taken to evolve improved methods of cultivation and to demonstrate them to the agriculturists and help the latter to adopt those methods. The Agricultural Research Station, situated at a distance of about five miles south of Bijapur city in the typically dry belt of Northern Mysore, is an important factor in this context. It is one of the oldest research centres of its kind in the country. The farm attached to the Station extends over an area of a little more than 110 acres and comprises mainly two types of soil, namely medium black and limy. The medium black soil, which is about five to six feet deep, fairly fertile and retentive of moisture, can grow good crops of rabi jowar, wheat, gram, groundnut and the like, while the limy soil, which is highly eroded, shallow (about two to three feet deep) and relatively poor, can grow crops of rabi jowar, gram, groundnut and tur.

When established in 1933, as a dry-farming research station, the station had a limited objective of evolving a better method of cultivation of rabi jowar. In 1943, it was converted into a crop-breeding station with a view to evolving drought-resistant and high-yielding varieties of important crops of the tract. Since then, plant-breeding aspects of crops like rabi jowar, wheat, bajra, groundnut, safflower, linseed, castor, gram, tur and mug are being attended to and a few improved strains have been already released. At the same time, the station is doing research on the agronomic aspects of principal crops of the area. Recently it has been made the main centre for sorghum research in the State. It has a regional research station at Bailhongal in the Belgaum district and another such regional research centre is to be established in the Chitradurga district.

The research centre has a well-equipped museum where improved strains of major crops of the region are displayed and the results of experiments carried out are shown by charts and graphs. Every year during January, a Farmers' Day is organised at the station, when improved methods of cultivation are demonstrated and the standing crops raised on the farm are shown to the cultivators.

What is popularly known as " Bombay Dry-Farming Method " was evolved at the station. The salient features of this method are :—

(*a*) Contour-bunding across the slope of land at every three feet vertical fall.

(*b*) Ploughing once in three years or one-third of the area every year and harrowing three to four times every year.

(*c*) Application of five cart-loads of F.Y.M. to the ploughed land.

(*d*) Sowing of M-35-1 variety of rabi jowar which is drought-resistant and high-yielding, using four lbs. of seed per acre.

Efforts have been made to improve the varieties either by hybridization or by pure line selection. In respect of major crops, world-wide collections were made. In 1962-63, two varieties of wheat, *viz.*, Bijaga Yellow and Bijaga Red were evolved. These are rust-resistant and high-yielding. Selections of G-1-8-5 variety of bajra, 'Badachani' and 'Harachana' varieties of gram, Hipparagi 2-21-14-14 type of groundnut and Hungund-2 variety of safflower have been made; these improved varieties are either high-yielding or richer in content.

Agronomic work

Scooping *i.e.*, making small pits of rabi land during kharif in order to reduce the run-of rain water and to help its penetration in the soil has been found to increase the yield of rabi jowar and wheat.

Green-manuring with sannhemp in years of favourable rainfall has been found to increase the grain-yield of rabi jowar and wheat by about 30 per cent, *i.e.*, as much as the fertilisers schedules would do. Sannhemp should be sown early in June and buried in the soil after about one and a half months leaving at least two months time before the rabi sowing.

Inter-culturing three or four times for rabi jowar and once for wheat after tillering is over, would help to conserve soil moisture and increase the grain-yield. Growing of jowar and wheat year after year on the same land was found to decrease the yield. To remedy this, it was recommended to grow either gram or groundnut in rotation with jowar or wheat once in two or three years.

An alternative way would be to take gram as a mixed crop with jowar or wheat. These methods, it was found, would help maintain soil fertility without affecting the crop-yields and would also increase the net income. Treatment of seeds with certain chemical substances while sowing proved to be of help in controlling seedling diseases and in increasing the grain-yield.

The Research Station has been multiplying foundation-seeds of recommended varieties for distribution in the district through the N.E.S. Blocks. With the introduction of newly released hybrid jowar and bajra, the station has on hand a programme of seed producton of CSH-1 jowar and HB-1 bajra.

There are also agricultural research centres at Kaladgi, Mudhol and Madarkhandi (Jamkhandi taluk) and a cotton research scheme is working at Bagalkot. The Agricultural School, Bagalkot, has been now converted into a gramasevaks' training centre. To

continue the Workshop Wing and the Youths' Training Programme attached to this centre, a financial allocation of Rs. 3.53 lakhs has been made in the Third Five-Year Plan.

Horticulture

A horticultural unit was started in the district in 1959. For introducing new varieties of fruits, vegetables and flowers and for distribution of seeds and plants of various kinds, two farms, one at Bijapur and the other at Indi, with an area of 13 and 18 acres respectively, were taken over from the Wilson Anti-Famine Institute, Bijapur. About 48,000 plants were raised in these farms and supplied to the various areas in the district. Eight ornamental gardens have been laid out. In the nursery at Bijapur, 25,000 seedlings of different varieties of flowers were raised and distributed. More than 18,000 fruit plants brought from different places in India were distributed to the farmers in the district.

Three schemes for development of fruits, coconut and arecanut are functioning in the district. The object of the Fruit Development Scheme started in 1963-64 is to supply seedlings, grafts and budded plants to cultivators for increasing the area under fruits. Now that fruit plants have been supplied on a large scale, it is expected that there will be an appreciable increase in the production of fruits. There are also signs of the people becoming more fruit-minded. The Coconut Development Scheme commenced working in 1965 and the aim of this scheme is to raise coconut seedlings and distribute them on a no-profit and no-loss basis. The Arecanut Development Scheme, also started in 1965, is at present a pilot trial scheme intended for trying arecanut plants in the district. If the arecanut plants fare well in the area, the scheme is expected to be developed and put on the same basis as the Coconut Development Scheme.

An intensive programme for stepping up vegetable production in the district has been launched and vegetable seeds are being distributed free of cost. The propagation of ornamental and flowering plants is also being organised. Under the Third Five-Year Plan, it is intended to bring 500 acres under new orchards and to rejuvenate 750 acres. For development of fruit production in the district a sum of Rs. 1.87 lakhs has been allocated in this Plan. The Bijapur district branch of the Mysore State Horticultural Society is functioning since 1959 and has a membership of over 300. It caters to the needs of the members by supplying information, plants, seeds and the like.

The total area under vegetables in this district was just over 10,000 acres in 1961-62, 10,983 acres in 1962-63 and 13,619 acres in 1963-64. Almost all vegetables, tuber and bulk vegetables and leafy vegetables are grown. Important among the vegetables grown are onion, sweet potato, carrot, radish, brinjal and tomato.

The fruits comprise water melon, musk melon, plantain and mango.

Viticulture

A viticultural research unit with its headquarters at Bijapur was started in 1962. Besides the Bijapur district, six other districts of Northern Mysore, namely, Belgaum, Dharwar, North Kanara, Gulbarga, Bidar and Raichur, are also covered by this unit. The object of this scheme is to carry on research and experimentation in grape-culture and to intensify and extend the cultivation of grape-vine in the areas, the climatic and soil conditions of which are well suited for the purpose. During the first two years of the scheme, over 56,000 rooted cuttings of Bhokri, Phakdi and Malta varieties of grapes were distributed to growers free of cost in this district.

Prior to the commencement of the scheme, about 35 acres of land were under grape cultivation. Thereafter, as a result of the incentive given by the scheme, the area increased to nearly 90 acres in this district in the course of two years. The target for the third year was to bring 50 more acres under grapes. The unit has been giving technical guidance to the growers in respect of selection of suitable lands, cultural practices and control of pests and diseases.

Cultivation of superior varieties of table and raisin grapes has been introduced in the district. At Jamkhandi, 60 varieties were planted for adaptive trial in 1963-64. In the demonstration plots laid out at Jamkhandi and Indi, 551 vines of Bhokri, Phakdi and Anab-e-shahi varieties were planted. Propagation of reliable planting materials of these three varieties to the extent of 80,000 was done in the district during the year 1964-65 for free distribution to the cultivators. There are bright prospects for viticulture in the district.

Labour and wages

As in the other contiguous districts, the tendency among the landholders in Bijapur district is to employ casual field labourers during the busy seasons of the year, namely, the sowing and the harvesting seasons. Heavy work is usually done by men, while women are employed for lighter types of work such as weeding, threshing and watching. The casual labourers are employed on a daily wage. Wages are paid generally in kind though a tendency to change over to cash wages is discernible. Casual labourers do not get the facilities given to the permanent farm servants (*saldars*). The wages in the taluks of Bagalkot, Jamkhandi and Bijapur are slightly higher than those in other taluks. A woman labourer generally gets less than what a man gets. Most of the landholders engage only daily labourers and only a few landholders engage on a monthly basis.

The Government of Mysore laid down in 1959 certain minimum daily wages for different categories of employment in agriculture, the minimum ranging from Re. 1 to Rs. 1.75. The least wage for weeding operation or cotton-seed removing varies from Re. 1 to Rs. 1.37. For irrigational work, the minimum ranges from Rs. 1.25 to Rs. 1.75.

Annual servants (*saldars or jeetadalu*) are employed in Bijapur district, usually by those cultivators who can provide continuous and regular employment for the whole of the year. Landholders who cannot work actually on the farm usually engage this type of labour. The *jeetadalu* is bound to do all types of farm work and should also be available all through the day and the night. The contract is generally for one year and may be renewed if both the parties so wish. Sometimes these servants borrow large sums of money from their employers and in such cases they have to remain with the latter till the whole debt is cleared. The annual servant, besides his cash wage, gets other facilities like food, clothing and living accommodation. Sometimes a consolidated cash wage is given and no other facilities are given. Normally, payment to a *saldar* is made in instalments. The actual wage paid varies from Rs. 100 to Rs. 400 with facilities of food, clothing, tea, tobacco, shoes, a blanket, etc. Where these other facilities are not provided, a higher consolidated cash wage is given.

Bad seasons

The fact that this district is highly susceptible to drought and famine and is known as a scarcity area will make a chronological account of the bad seasons in this district interesting reading.

The earliest recorded famine was the great Durgadevi famine of 1396 which is said to have lasted for 12 years. In 1422 and 1423 no rain fell and there was a grievous famine throughout the Deccan and the Karnatak. In 1442, multitudes of cattle died for want of water. In 1460 the failure of rain was followed by famine, and 1472 and 1473 were years of severe distress. No rain fell and no crops were sown for two years. The people died or fled the country, so that, when rain fell in the third year, there were not enough men left to till the land. During 1629-30, no rain fell in the Deccan, and a famine and pestilence occurred. In 1631 the Mughal army under Asaf Khan besieged Bijapur, but when the supplies of the Mughal army were cut off, much distress was caused in the Mughal camp. In 1666, when the Mughals again besieged Bijapur, their supplies were again cut off, and for about eighty or hundred miles around Bijapur not a trace of grass or fodder was left and the Mughal army was reduced to great straits. In 1685 very little rain fell and grain became so

scarce and dear that it was difficult to get a loaf. In 1717, there was a severe famine. Thousands perished and the memory of the hardships undergone lingered with the people for years. In 1784 a severe famine is said to have lasted for three years. Thousands perished and the bones of the dead whitened the ground for miles. In 1791, want of rain again brought famine. No measures were taken to relieve the distress and so many perished for want of food, that this famine is still remembered as the Dogi Bara or skull famine, because the ground was covered with the skulls of the unburied dead. In 1803, the rainfall was good and the crops were promising but the raids of Pindhari freebooters turned a year of plenty into a year of famine. The disturbed state of the country prevented the late crops being sown, and the early crops were destroyed by ravages of the troops. Between 1818 and 1820, want of rain caused a famine in Muddebihal, Indi and Bijapur. The poor were reduced to eating parched tamarind seeds and large numbers of men and cattle are said to have perished. In 1832-33, want of rain caused a failure of crops and relief works were started. Many are said to have died of hunger. Between 1863-64 and 1866-67, there was scanty rainfall causing repeated failure of crops, but the high price of cotton in consequence of the American War had enriched the people and large supplies of grain were brought from Sholapur and the distress was not felt acutely. The scanty rainfall of 1876 led to the failure of crops and distress amounting to famine over the whole of the district, the central portions suffering most severely. Fodder was scarce and large numbers of cattle were driven either to the Kanara forests or into the Nizam's territory in the hope of saving them. In some places the markets were almost empty, and no grain could be bought at any price. Relief work had to be closed, because there was no grain for the people to buy. Under these circumstances, Government imported 2,46,000 lbs. of jowar from Belgaum and Sholapur and kept it as a reserve in case of the failure of the local dealers or contractors to supply from their stocks. The presence of this grain had a wonderful effect. Stores were brought out, supplies became plentiful all over the district, and prices fell. In 1891-92, owing to partial failure of the south-west monsoon, famine was declared in the Bijapur district. Remissions and suspensions of land revenue were granted and large advances of taccavi were also made. The great famine of 1896-97 was caused by irregular rainfall. There was practically no rainfall in September and October to bring the kharif crops to maturity. The out-turn of kharif crops in the district was not even a quarter of the average and there was practically no rabi crop at all. The sudden and general rise in the prices of foodgrains pressed heavily on persons who had no savings. Relief works were opened. The collection and breaking of road metal were considered suitable works in the early stages but subsequently irrigation works were also undertaken. When again the famine

of 1899-1900 was of unprecedented severity, relief works were undertaken on a large scale. In 1905-06, famine was declared and the number of relief works of all kinds in this district was the largest of all the famine-stricken areas of the Bombay Presidency. The year 1911-12 was again a bad year. The season of 1918-19 was one of the most disastrous on record. The year 1918 will be looked upon for a long time to come as an extreme example of the droughts which so frequently affect this district. The occurrence of the influenza epidemic added to the distress. In 1920-21, the monsoon current was so weak that the outlook of kharif was serious. The rabi rains were very poor. Relief works were opened, and suspensions and remissions of land revenue went a long way towards the alleviation of distress. The years 1923-24 and 1926-27 were again years of great distress. Failure of rains in 1936 was again the cause of scarcity in the whole of the Bijapur district, except Badami and Bagalkot taluks. Scarcity works were provided by the District Local Board and the Public Works Department and famine relief committees received generous donations for granting charity. Irregular and insufficient rainfall in 1941 resulted in the failure of crops in 303 villages in Bijapur district. The September rains failed again in 1942 and the distress deepened and 1,090 villages out of 1,174 were affected. Ninety-nine scarcity works were started and a large number of workers were employed on major tank works and land improvement works. Cash doles amounting to about Rs. 15 lakhs were distributed. Large quantities of fodder were imported and sold at concessional rates. Non-official committees helped to collect large donations which were utilised for kitchens, cattle camps and free distribution of cloth. The early rains in 1945 were erratic and insufficient and the complete break in September caused extreme failure of both kharif and rabi crops. The whole of the district was affected, but the distress was successfully alleviated by comprehensive and liberal relief measures, in which Government departments and charitable institutions vied with each other. In 1947-48, scarcity again affected Bijapur and Bagalkot taluks, the reasons being the failure of early rains and pest of grasshoppers. The district was again affected by scarcity conditions in 1953-54, 1958-59, 1963 and 1965.

Wilson Anti-Famine Institute

The Wilson Anti-Famine Institute Ltd., Bijapur, has been a unique institution in the district. It was founded in 1927 as a district development association on a co-operative basis with the object of taking concerted measures for promoting agriculture and general welfare of the farmers and for rendering help during famine or scarcity conditions. Before the launching of the large-scale Plan Schemes, the Institute rendered manifold services in some measure to the agriculturists.

It opened eight branches in the taluks and organised supplies of improved seeds, chemical fertilisers and insecticides. Better agricultural implements were hired out to farmers on normal rents and breeding bulls were maintained. Manure pits were dug and nursery sheds were constructed and poultry farms were started. Agricultural exhibitions were conducted in different parts of the district and an agricultural library and a museum were maintained at Bijapur. The Institute propagated among the farmers that the soil of the district is suitable for growing groundnut and gave considerable impetus to cultivation of the same in the district.

The branches were, however, later closed down. The institution is now carrying on the work of distribution of seeds, chemical fertilizers, galvanised iron-sheets, iron bars and rods, cement and the like to agriculturists. Efforts are under way to make the institution more useful to the farmers. It is proposed to start a show room-*cum*-sale depot for improved agricultural implements, seeds, manures, insecticides, fungicides and other agricultural needs.

The Deputy Commissioner of the district is the President of the institution. As on the 30th June 1965, the Institute had a membership of 540 and general and reserve funds of nearly Rs. 1,50,000, while its land and buildings were valued at over Rs. 63,000. Agricultural requisites of about six lakhs of rupees were supplied by the Institute to farmers during the year 1964-65.

Irrigation

Due to the untimely and inadequate nature of rainfall, Bijapur district has frequently suffered from chronic scarcity and recurring famines. Though the district is being traversed by perennial rivers like the Krishna, Ghataprabha and Malaprabha, the area under irrigation at present is very small, specially so in relation to the total geographical area and the net area sown with agricultural crops. The total geographical area according to village papers is 42,31,263 acres, out of which the net area sown was 35,71,636 acres in 1961-62, 35,83,413 acres in 1962-63 and 35,58,164 acres in 1963-64. According to the figures supplied by the District Agricultural Officer, for the year 1961-62, an area of 11,346 acres was being irrigated by Government canals, 2,290 acres were under tanks, excluding certain major tanks, and 65,321 acres under irrigation wells. The following table indicates the extent of irrigated area in each taluk in 1961-62 :—

Taluk	*Government canals*	*Tanks*	*Wells*
Badami	...	226	746
Bagalkot	...	4	500
Bagewadi	278	...	4,710
Bijapur	...	800	8,098
Bilgi	...	...	419
Hungund	...	...	385
Indi	1,120	190	32,550
Jamkhandi	7,500	60	6,758
Muddebihal	...	85	1,370
Mudhol	2,448	...	3,783
Sindgi	...	925	6,002

The progress made in the next two years is given in the following Statements :

Extent of Net Area Irrigated in Bijapur District.

	1962-63			
Taluk	*Govt. Canals*	*Tanks*	*Wells*	*Other Sources*
1. Badami ..	..	387	695	167
2. Bagalkot ..	..	8	797	304
3. Bagewadi ..	1,324	..	1,368	..
4. Bijapur ..	..	1,017	8,698	169
5. Bilgi ..	..	..	955	114
6. Hungund ..	..	..	438	..
7. Indi ..	1,120	290	32,550	175
8 Jamkhandi ..	7,604	62	6,969	..
9. Muddebihal ..	23	155	1,407	10
10. Mudhol ..	6,070	..	4,581	190
11. Sindgi ..	..	925	7,000	25
Total .	16,141	2,844	65,458	1,154

Grand Total for the district in 1962-63 was 85,597 acres.

1963-64

Taluk	*Govt. Canals*	*Tanks*	*Wells*	*Other Sources*
1. Badami ..	..	400	794	185
2. Bagalkot ..	..	337	1,222	..
3. Bagewadi ..	..	834	4,730	..
4. Bijapur ..	..	1,644	7,470	..
5. Bilgi ..	4	..	1,038	110
6. Hungund ..	..	..	788	..
7. Indi ..	1,480	290	37,102	250
8. Jamkhandi ..	10,416	222	8,648	..
9. Muddebihal ..	23	146	1,657	..
10. Mudhol ..	5,473	..	4,518	4
11. Sindgi ..	..	1,025	7,139	25
Total ..	17,396	4,898	75,106	574

Grand Total for the district in 1963-64 was 97,974 acres.

The extent of net area irrigated further rose to 99,858 acres in 1964-65. The gross areas irrigated in 1962-63 and 1963-64 were 91,922 acres and 1,07,113 acres respectively.

In addition to the above, in 1964-65, a total of 2,269 acres was being irrigated by five major tanks, namely the Nagathan tank (600 acres), the Ramanahalli tank (724 acres), the Areshankar tank (400 acres), Mamdapur tank (460 acres) and the Kalaskop tank (85 acres). The Ghataprabha Left Bank Canal was irrigating 17,568 acres in 1964-65. In addition to the *bandharas* constructed and regulated by the irrigational authorities, a number of private *bandharas* are scattered all over the district, which have not been included in the tables quoted above.

Tanks

There are a number of tanks in the district which were irrigating 4,898 acres in 1963-64. In order to step up the irrigated area under tanks, increasing attention is being paid to annual repairs of the field channels. This is being done under the various minor irrigation schemes, which are being implemented as plan schemes. Of these tanks, the one at Arisibidi in Hungund taluk has been out of commission for nearly a century because of a breach in the dam. There are now 21 big tanks in the district, the more important of them being the Makhanapur tank in Bijapur taluk, the Nandargi tank in Indi taluk, the Asangi tank in Bagewadi taluk (new tank), the Kendur tank in Badami taluk.

the Mamdapur tank in Bijapur taluk, the Tadavalga tank in Indi taluk, the Todalbagi tank in Jamkhandi taluk, the Bableshwar and Ramanahalli tanks in Sindgi taluk, the Areshankar tank in Bagewadi taluk and the Kalaskop tank in Bagalkot taluk.

Under the plan schemes, some new tank construction works were sanctioned. These were the Doddamahakuta in Badami taluk, Basavapatna tank in Mudhol taluk, the Kotnal tank in Indi taluk, the Sulkhed tank in Bagewadi, the Hunshyal tank in Sindgi and the Gandkarjgi tank in Muddebihal taluks.

Irrigation wells

Irrigation wells are the main source of water for raising wet crops. According to the statistics furnished by the District Agricultural Office for the year 1961-62, there were 19,316 irrigation wells, irrigating an area of 65,321 acres in all the taluks of the district. In 1962-63 and 1963-64, the area irrigated by wells rose to 65,458 acres and 75,106 acres respectively. The Third Plan envisaged sinking of 1,000 wells. The wells used for irrigation are rectangular as well as circular and 25 to 35 feet deep. The wells are sometimes lined with brick and stone and mortar, but more usually lined with cut stones. The water for irrigation is lifted by a *mot* (leather or iron container). The leather *mot* is of two sizes, one measuring about ten feet from mouth to mouth. These leather containers are worked only in deep wells. The other *mot* is from five to six feet and is worked in small wells. The leather *mot* is more in use all over. A *mot* is worked by a pair of bullocks. Recently, irrigation pump sets worked by diesel oil have become very popular. During 1962-63, there were in all 1,155 pump sets. Pumpsets are supplied on hire-purchase basis to agriculturists and the number of sets so supplied was 388 in 1962-63, 309 in 1963-64 and 347 (including 3 electrical motor pumps) in 1964-65. There were two lift irrigation co-operative societies in the district with a membership of 66 and share capital, reserve and other funds of Rs. 35,513 as on 30th June 1964.

Bandharas

The *bandharas* in the district have been of immense help in irrigating a sizable acreage. There are many *bandharas* scattered all over the district, of which the Geddalmeri and Kalhal *bandharas* are prominent. These two *bandharas* are together irrigating 580 acres. *Bandharas* are small weirs built across streams in order that the level of water flowing in the stream is raised sufficiently to command the lands to be irrigated. Most of the bandharas are built of mud and a few are of masonry. These are renewed or repaired annually after the rainy season. The channels taken out from these *bandharas* are not bridged, hedged, wedged or otherwise protected. The water is taken to the agricultural fields by gravitational flow. When the water in the dam falls below the level of the channel, the water is lifted either by pumps or wooden shovels. The *bandharas* are looked after by the revenue authorities.

Percolation tanks

Irrigation with the help of the percolation tank is yet another method practised in the district. These tanks may also be called major *bandharas*. The water from these storage tanks percolates through the soils and makes wet cultivation easier under its command. The more important percolation tanks in the area are the Tungal, Halingal, Ilkal, Budihal, Chikkamagi, Amingad, Teggi, Munnur and Jalwad tanks. During the Second Plan period, the Bijjargi percolation tank was constructed at a cost of Rs. 74,560.

Irrigation Potential

To ensure protection against recurring scarcity conditions in the low rain-fall districts, irrigational facilities have to be extended immensely to as large an area as possible. The Government have been taking several measures in this direction. An irrigation investigation division and also a sub-division have been set up at Bagalkot, while the Ghataprabha Project Division and the Upper Krishna Project Division are working at Jamkhandi and Almatti respectively. A major irrigation projects sub-division and also a minor irrigation sub-division have been located in Bijapur city. After the achievement of Independence, investigation of irrigation potential of the area was broad-based and accelarated. Prior to the re-organisation of States, two major schemes, *viz.*, the Ghataprabha Valley Scheme and the Koyna Scheme were taken up by the then Bombay State. From November 1956, the benefits of the Koyna Scheme were restricted to the Maharashtra area. The Ghataprabha project has been continued so as to benefit Bijapur and Belgaum districts.

There are three categories of irrigation schemes, major, medium and minor. If a scheme is to cost more than five crores of rupees, it is designated as a major scheme, while a project which would cost more than 15 lakhs but less than five crores is called a medium scheme. A work which may cost less than 15 lakhs of rupees is styled a minor one.

Several medium irrigation projects have been investigated and are awaiting sanction. Among these are :—

Balakundi Tank Project in Hungund taluk estimated to irrigate about 3,160 acres and cost about Rs. 32 lakhs (as per revised estimates).

Rangasamudra Tank Project in Bagewadi taluk estimated to irrigate about 2,485 acres and cost about Rs. 34 lakhs.

Madakesirur Tank Project in Muddebihal taluk estimated to irrigate about 1,320 acres and cost about Rs. 20 lakhs.

Kadlewad Tank Project in Sindgi taluk estimated to irrigate about 750 acres and cost about Rs. 18 lakhs.

Another notable medium scheme, Arjanal Tank Project in Indi taluk, which may irrigate about a thousand acres and cost over 20 lakhs of rupees, is still under investigation. A major scheme, the Bijapur Lift Irrigation Scheme, which may irrigate over eight lakh acres and cost over 56 crores of rupees is being further investigated. A Dhone river scheme is also being contemplated. Investigation of a number of minor irrigation schemes has been completed.

Progress of Irrigation Works

Under the First Five-Year Plan, 7,236 additional acres were brought under lift irrigation and also six bandharas were constructed to irrigate about 422 acres. Eleven minor irrigation works, each costing more than Rs. 50,000 and less than Rs. 10 lakhs were executed during the Second Plan. Out of these, three works were spill-over projects from the First Plan. The over-all expenditure incurred on these schemes during the Second Plan amounted to Rs. 8,60,361. The Areshankar, Ramanahalli, Kalaskop and Nagathan medium irrigation projects, which were in progress during the Second Plan, were carried over to the Third Plan, and have been now completed at a total cost of about Rs. 98 lakhs and they will irrigate over 12,000 acres of land in all. The Third Plan envisaged several minor irrigation works as well, involving construction of new tanks, restoration of tanks including breached ones, opening of feeder channels, construction or improvement of anicuts, pick-ups, bandharas and channels and sinking of new irrigation wells. Provision was made also for well-boring and supply of electrical and diesel oil pumpsets.

For sinking of new irrigation wells, repairs or deepening of the existing ones, installation of pumping sets and also for reclamation of lands, loans are being advanced under the provisions of the Land Improvement Loans Act and the Agricultural Loans Act and from the budget of the Community Development Blocks.

The work on the Ghataprabha Left Bank Canal was started in 1952-53 and it was in progress during the Second Plan also. At the end of the Second Plan period, an extent of 9,936 acres of land was brought under irrigation under this major project, the work of which was then carried over to the Third Plan.

Stage I of this project has been now completed and the work of Stage II has begun. The financial allocation for this scheme during the Third Plan period was Rs. 570 lakhs. This project will be carried over to the Fourth Plan. When completed, it is expected to irrigate about 1.75 lakh acres in Jamkhandi, Mudhol and Bilgi taluks of Bijapur district.

Malaprabha Project

The Malaprabha Project benefits Bijapur, Belgaum and Dharwar districts. It is practically a new Third Plan scheme and the work is progressing. The project contemplates a reservoir across the Malaprabha river in Belgaum district with a right bank

canal, about 120 miles long, and is estimated to cost over 20 crores of rupees. However, no potential utility is expected during the Third Plan. The project will irrigate about 3,000 acres in Bijapur district.

Chittavadgi (Kadur) Tank Project

The Chittavadgi (Kadur) Tank project, the work on which was inaugurated in September 1965, will benefit Hungund taluk of Bijapur district and Kushtagi taluk of Raichur district. It was contemplated since 1954 and was a matter of protracted correspondence between the then Bombay and Hyderabad States. The question was automatically solved in 1956 when both the districts concerned became a part of the New Mysore State. There will be a canal each from both the banks of the reservoir, the catchment area of which will be about 56 square miles. The capacity of the reservoir, to be located near Kadur village in Kushtagi taluk of Raichur district, is expected to be about 201 million cubic feet. Over 500 acres would be submerged. The extent of area to be irrigated will be about 2,200 acres, while the estimated cost of the project is 36 lakhs of rupees.

Upper Krishna Project

The Krishna is the second biggest river in peninsular India. It has a total drainage area of about 97,000 square miles, out of which about 45,000 square miles lie in Mysore State. In order to utilize this bountiful water-resource for the benefit of extensive areas in Bijapur, Raichur and Gulbarga districts, the Upper Krishna Project was first framed in 1960. It was intended to extend irrigation facilities to about 12 lakhs of acres with a gross command area of about 20 lakh acres.

The project was further examined in 1963 and it was proposed to construct a storage dam at Almatti (Bijapur district) with a left bank canal and another storage dam at Narayanpur (Gulbarga district) with left and right bank canals. Stage I was to utilise 103 T.M.Cft. of water to irrigate 5.33 lakh acres, while stage II was to utilise a total of 226 T.M.Cft. and irrigate 12 lakh acres in all. The project also contemplated a further expansion to be executed under Stage III for an ultimate utilisation of 340 T.M.Cft. of water. The proposals, however, underwent further changes subsequently. It was decided to locate the second storage dam at Siddapur (Bijapur district) instead of at Narayanpur (Gulbarga district). The former place is about four miles upstream from the latter. Now, Phase I envisages :—

(i) Construction of a storage reservoir at Almatti in Bagewadi taluk with part of a left bank canal to irrigate about 3.20 lakh acres in Bijapur and Gulbarga districts.

(ii) Construction of a second storage reservoir at Siddapur (Muddebihal taluk) with a left bank canal (unlined) to irrigate about 2.80 lakh acres in Gulbarga district.

Phase I is to utilise 116 T.M.Cft. water to irrigate an area of six lakh acres and is estimated to cost about Rs. 59 crores of rupees.

Phase II of the project contemplates :—

(i) Completing of the left bank canal of Almatti in all its aspects, to irrigate an additional area of 2.30 lakh acres in Bijapur and Gulbarga districts. (There is to be only a left bank canal at Almatti).

(ii) Lining of the Siddapur left bank canal and its completion in all respects ; and completing of right bank canal of Siddapur in all its aspects to irrigate about 3.70 lakh acres in Raichur district.

This second stage is expected to utilise 110 T.M. Cft. of water and irrigate an additional area of about six lakh acres and may cost about Rs. 56 crores.

There is also provision for expansion under a third phase to be taken up after the irrigation facilities are well developed and stabilised under the first two stages. Under phase III, utilisation of water is expected to be to the tune of 375 T.M. Cft. in all.

Under phase I, about 1.1 lakh acres and then under phase II an additional extent of about 1.62 lakh acres will be irrigated in the Bijapur district. During the Third Five-Year Plan, phase I of the project has been started and the preliminary works have been completed.

ANIMAL HUSBANDRY

Livestock

In conformity with the pattern of agriculture all over the country, the agriculturist of Bijapur also relies a great deal on livestock which is his valued possession. A farmer usually keeps a pair or two of bullocks and a few cows and buffaloes ; in addition, he may have some sheep, goats and poultry. Since the people of this district have not taken yet to mechanical implements in any great measure, bullock-driven ploughs, carts and water lifts are in common use, especially in rural areas. The farmer's status and efficiency is still judged by the number of cattle he possesses. The 1961 Livestock Census of Bijapur district, given below, shows the number of animals and birds of different categories [1]:

1. SOURCE : 9th Quinquennial Live-stock Census, 1961. (Director of Animal Husbandry and Veterinary Services in Mysore, Bangalore.)

LIVESTOCK IN BIJAPUR DISTRICT
(1961)

Cattle—		
Males	...	2,80,742
Females	...	2,07,584
Total	...	4,88,326
Buffaloes—		
Males	...	26,753
Females	...	1,75,586
Total	...	2,02,339
Sheep	...	2,38,108
Goats	...	3,09,067
Horses and ponies	..	4,366
Mules	...	24
Donkeys	..	2,843
Pigs	...	6,472
Camels	...	1
Ducks	...	1,180
Fowls	...	3,68,678

(Fowls include hens, cocks and chicken. Ducks include ducks, drakes and ducklings).

Bullocks are used mainly for heavy agricultural work on the farm and the cows and she-buffaloes are kept for purposes of breeding and production of milk. The cattle in this district belong mainly to the imported varieties, the important among these being the *khillar*. The local Krishna valley animals are bred in the areas along Krishna river. Besides these, there are other pure breeds and the crosses of local breeds. Among the buffaloes, the *pandharpur* type is found in this district. A *khillar* cow costs about Rs. 300 to Rs. 400, and a pair of bullocks of the same breed may cost anywhere between Rs. 1,200 and Rs. 1,400. A good *khillar* breeding bull costs about Rs. 2,000 to Rs. 2,500, while a good Krishna valley breeding bull would cost about Rs. 1,000 to Rs. 2,000. A Krishna valley cow costs between Rs. 300 to Rs. 500 and a pair of bullocks of the same breed costs about Rs. 1,200. A *pandharpur* buffalo can be purchased at a price varying from Rs. 500 to Rs. 700. The local non-descript milch buffalo costs between Rs. 150 to Rs. 300. Similarly, the local non-descript pair of bullocks may cost between Rs. 300 to Rs. 600.

She-buffaloes are gaining popularity in recent years, mainly because of their higher milk yields. The cattle provide fertile farmyard manure and about 80,000 tons of farmyard manure are collected annually, the approximate value of which may be about four to five lakhs of rupees.

Bijapur district has a large number of sheep and goats, and is known as an important sheep and goat-rearing district. A sheep breeding research sub-station has been established at Anagwadi in Bilgi taluk. Experimental sheep breeding flocks are maintained and selective breeding among the local Deccani sheep is being carried out.

Poultry keeping is a cottage industry in the rural areas of this district, eggs, fowls and ducks being valuable items of food. A large number of agricultural families are engaged in poultry keeping as a secondary means of livelihood.

An intensive sheep and wool development programme was organised in selected places at a cost of Rs. 28,500 during the Second Plan period. Improvement of livestock in the rural areas was undertaken through the introduction of improved breed of bulls, rams and poultry. There were 106 breeding bulls with selected custodians for covering cows in different parts of the district. Two artificial insemination centres and two key village scheme centres were started. Seven persons were deputed for training at Hebbal, Hessarghatta, Hyderabad and Delhi in different aspects of livestock development and also 24 candidates were trained in the Veterinary Hospital, Bijapur, during the Second Plan period. A poultry extension centre was opened at Bijapur with 250 birds brought from Hessarghatta and about 700 breeding stock was distributed to good breeders. There are private Gosadans and Pinjarapoles in the district. Cattle shows are organised every year at important centres. The local bodies also are evincing interest in this activity and are providing funds for the purpose.

The Third Five-Year Plan has made a financial allocation of five lakhs of rupees for development of eight extension centres under the Sheep and Wool Improvement Programme. Each centre would have a dipping tank, a shearing shed and a dispensary and would be a demonstration unit for popularising various improved methods of management, feeding and breeding. It was also envisaged to distribute sheep at subsidised rates to accredited sheep breeders on certain conditions. The objective of the Key Village Scheme, for which the Third Plan has provided a sum of eighty thousand rupees, is to improve the cattle breed by location of breeding bulls and by artificial insemination and to provide for calf subsidy. As on 30th June 1964, there were two co-operative milk supply societies in the district with a membership of 364 and share capital, reserve and other funds of Rs. 31,552.

For augmenting veterinary facilities and for development of poultry and piggery also, an amount of Rs. 2.30 lakhs has been allocated in the Third Plan. In order to improve breeding and produce best quality cattle, bulls are being supplied free. For opening two more artificial insemination centres, one at Bagalkot

and another at Bilgi, a sum of Rs. 80,000 has been sanctioned in the Third Plan. In Bagalkot, Badami, Hungund, Bagewadi, Muddebihal and Bilgi taluks, the local bodies have earmarked funds for construction of veterinary dispensary buildings in their taluks.

Backyard raising of poultry is popular in the district. Development of poultry in the area has good scope as there is demand for eggs and poultry meat. With the modern practice of raising poultry in deep litter, more intensified poultry production can be taken up.

Recently, a sheep development scheme has been lanuched in the district for the development of both mutton and woolly types of sheep. About a 1,000 Deccani ewes and 40 rams, costing nearly Rs. 62,000, are to be distributed. Fifty per cent of the cost of these sheep will be treated as subsidy, while the remaining 50 per cent as loan, repayable in five equal annual instalments.

There were 46 veterinary institutions in this district in 1964-65 for the treatment of the cattle and were located at taluk headquarters and also in the rural areas. A list of veterinary institutions functioning in this district is given below :

Statement showing the Veterinary Institutions in Bijapur District (1964-65)

Sl. No.	*Name of the Institution*	*Taluk*
1	Veterinary Hospital, Bijapur	... Bijapur
2	R. V. D., Bableshwar	.. ,,
3	Veterinary Dispensary, Jamkhandi	... Jamkhandi
4	R. V. D., Terdal	... ,,
5	R. V. D., Savalgi	.. ,,
6	K. V. S., Jamkhandi	... ,,
7	Veterinary Dispensary, Mudhol	... Mudhol
8	V. A. C., Lokapur	.. ,,
9	V. A. C., Mahalingpur	.. ,,
10	A. I. Sub-Centre, Mudhol	.. ,,
11	Veterinary Dispensary, Bilgi	... Bilgi
12	Veterinary Dispensary, Bagalkot	... Bagalkot
13	V. A. C., Kaladgi	... ,,
14	V. A. C., Sitimani	... ,,
15	Veterinary Dispensary, Badami	... Badami
16	V. A. C.. Nandikeshwar	... ,,
17	V. A. C., Kulgeri-Cross	... ,,
18	R. V. D., Kerur	.. ,,
19	R. V. D., Guledgud	... ,,

Sl. No.	*Name of the Institution*	*Taluk*
20	Veterinary Dispensary, Hungund	... Hungund
21	R. V. D., Kerur	.. ,,
22	R. V. D., Amingad	.. ,,
23	R. V. D., Ilkal	.. ,,
24	A. I. C., Hungund	.. ,,
25.	Veterinary Dispensary, Muddebihal	... Muddebihal
26	R. V. D., Nalatwad	... ,,
27	R. V. D., Talikot	... ,,
28	Veterinary Dispensary, Bagewadi	... Bagewadi
29	R. V. D., Mangoli	... ,,
30	R. V. D., Kolhar	.. ,,
31	R. V. D., Nidagundi	... ,,
32	Veterinary Dispensary, Sindgi	.. Sindgi
33	V. A. C., Korwar	.. ,,
34	V. A. C., Almel	.. ,,
35	V. A. C., Devarahippargi	.. ,,
36	Veterinary Dispensary, Indi	.. Indi
37	V. A. C., Nad	.. ,,
38	V. A. C. Tadavalga	.. ,,
39	V. A. C. Horti	.. ,,
40	V. A. C. Chadchan	.. ,,
41	Poultry Extension Centre, Bijapur	.. Bijapur
42	Key Village Scheme, Bijapur	.. ,,
43	R.V.D., Halasangi	.. Indi
44	A.I. Sub-Centre, Badami	.. Badami
45	A. I. Sub-Centre, Bilgi	.. Bilgi
46	R. V. D., Gunadal	.. Bijapur

R.V.D.—Rural Veterinary Dispensary
K.V.S.—Key Village Scheme
V.A.C.—Veterinary Aid Centre
A.I.C.—Artificial Insemination Centre
A.I.S.C.—Artificial Insemination Sub-Centre

SUMMARY

Sl. No.	*Type of Institution*	*Number*
1.	Veterinary Hospital ..	1
2.	Veterinary Dispensaries ..	10
3.	Rural Veterinary Dispensaries ..	15
4.	Veterinary Aid Centres ..	13
5.	Key Village Scheme Centres ..	2
6.	Artificial Insemination Centre ..	1
7.	Artificial Insemination Sub-Centres ..	3
8.	Poultry Extension Centre ..	1
	Total ..	46

FISHERIES

The rivers and tanks are the main sources of fisheries in the district. The main rivers in the district are the Krishna, Dhone, Ghataprabha and Malaprabha. The river Bhima runs along the northern border of the district. The total length of the rivers in the district is about 300 miles. There are thirteen major tanks in the district with a total water-spread area of about 3,000 acres. There are also a good number of minor tanks and irrigation wells.

The development of riverine fisheries has to be in the very nature of things a long range programme. Now efforts are being concentrated on the development of fisheries in confined sheets of water. A preliminary survey of irrigation tanks such as Makhanapur, Nandargi, Asangi, Tarnal and Bhutnal was carried out with a view to finding out their suitability for pisciculture. Some of these tanks are found eminently suitable for fish culture, and attempts are being made by the Department of Fisheries to stock them with quick-growing varieties of fish such as *catla*, *rohu* and *mirgal* imported from Bengal. It is expected that in due course, when fish culture activities increase in the district, they will augment the local fish supply which is at present very scanty.

Four tanks namely, Nagathan, Kalaskop, Sirur and Makhanapur have been taken up for fisheries development. About 54,600 fingerlings of Bengal carps have been stocked in these tanks for increasing production. In addition, 50,000 fingerlings of local food fishes collected from the rivers have been stocked.

A fish farm at a total cost of Rs. 23,000 was established at Bhutnal reservoir, near Bijapur for fish seed production and rearing, under the Second Five-Year Plan. There were about 500 fisheries and fish production was approximately of 300 tons per annum at the end of the Second Plan. A financial allocation of Rs. 1.67 lakhs has been made in the Third Plan for development of fish production in the district. The programme included supply of fishery requisites, launching of a pilot project for revitalising primary fishery co-operative societies and marketing unions, improvement and construction of fish markets, fishery training, fish seed production, rearing and distribution and intensive development of fisheries in Community Development Blocks and assistance to private fish farmers. By these measures, fish production in the district was expected to increase to 500 tons per annum.

There are fish markets at Bijapur, Jamkhandi and Bagalkot. The total fish consumption in the district is estimated at 450 to 500 tons annually including sea fish.

Method of fishing

Fishing in rivers and tanks is done by means of cast nets (*sokari* and *jhyar*), fixed nets (*sarkhya*, *bagar*), drag nets (*bava*) and by rod and line (*gana*). The most elementary type of net in vogue which still continues to be of great use to inland fisheries is the cast net. When cast in the water, it takes the form of a perfect circle, and is thrown down over the fish from above the surface of water. The base of the cone is provided with weights to make it sink down quickly into the depths. The margin of the net is folded to form a series of pockets where the fishes get trapped when the net is hauled by pulling the string. The mesh of the net varies from $\frac{1}{2}''$ to 2" square depending upon the size of the fish to be caught. The fixed net is a conical type of net, the base of which is open and rectangular. The net resembles a trawl, but unlike the latter it is not dragged, but it remains stationary in the water. The size of the mesh diminishes as the net tapers towards its extremity where it forms an impenetrable bag. The net is operated just after the monsoon when there is a strong current in the river. It is so fixed that its mouth is kept wide open against the current in a rectangular form. The fish collected at the cod end is taken out by loosening the rope tied round it. The drag net (*bava*) is the largest type of net used for capture of fish, both in rivers and tanks. During the process of dragging the net, most of the fish are enclosed in the central conical part of the drag net, from where they are emptied by loosening the rope tied round the cod end.

The fish fauna of economic importance consists of (*a*) Labeo fimbriatus, Labeo calabasu, (*b*) Ophiocephalus species, (*c*) Mystus species, (*d*) Wallago attu, (*e*) Anguilla bengalensis, (*f*) Mastacembelus and (*g*) Barbus species. Major carps and common carps (Cyprinus carpio) have been introduced in recent years.

Amongst the important fresh water fauna of the district, fishes like *gojri* and *kudda* are found mainly in the Krishna and Ghataprabha. The former is very bony and is not much relished as food. Occasionally, *kudda* measuring as much as five feet and weighing upto 80 lbs. are recorded in the river Krishna. It is generally considered to be the largest fresh water fish. *Bali* and *Gojli* are found in rivers as well as in tanks. *Katarni meen* are usually caught in good number by using hook and line. *Kulkarni* which occurs in the river Krishna does not figure largely in the catches. *Bloth*, which is found in almost all tanks and rivers, attains a size of about six inches. It is a surface feeder, subsisting mainly on insects and worms. In view of its larvicidal character,it is regarded as uesful in anti-malarial campaigns. The *sandkoli* or *sasul* is also found in tanks and rivers. Besides being larvicidal, it deserves a place in domestic aquaria in view of its brilliant colours. The other types of fishes like *heral, kadra, kolas,* and *tambi* are found in rivers

while *lalfakri* is found in tanks and rivers. Baous, in view of its rare appearance in the river Krishna, is revered as a sacred fish and it is reported that fishermen usually release it back into the river whenever they chance to get it in their nets. The *murangi* and *marangi* are small varieties. They are bottom feeders, dwelling usually on gravelly and sandy bottom. There is a belief that soup prepared from these fishes cures cough and cold. *Aoul* and *dhoak* are generally found in rivers and tanks, but being carnivorous, they are not useful for fish culture. Due to the presence of an accessory respiratory organ, these fishes can remain alive out of water for a considerable time. The *havumeen* and the *malaga* are generally relished.

Fishing Communities

The chief fishing communities are the Bhois, Kolis and Ambigars. Mahars follow fishing as a part-time occupation to improve their economic condition. The total fishing population of the district is about 5,000 out of whom about 1,000 persons are solely engaged in fishing while the remaining follow mainly other professions. Since the fishing season lasts only for six months from September to February, the fishing communities have to work as labourers in other occupations during the off-season. The economic condition of fishing communities has always been poor. Recently, the enforcement of prohibition and other amelioratory reforms have been responsible for improving the condition of these people.

As on 30th June 1964, there were seven co-operative fishery societies with a membership of 478 and with a share capital, reserve and other funds of Rs. 14,618.

TABLE I

Agricultural Land Utilisation—Taluk-wise—in Bijapur District in 1960-61 (in acres)

Category	*Badami*	*Bagalkot*	*Bagewadi*	*Bijapur*	*Bilgi*	*Hungund*	*Indi*	*Jamkhandi*	*Muddebihal*	*Mudhol*	*Sindgi*	*Total for the District*
Geographical area according to professional survey.	3,44,515	2,31,320	4,88,934	6,56,729	1,93,160	3,34,476	5,49,790	2,88,749	3,70,026	2,35,861	5,37,703	42,31,263
Geographical area according to village papers.	3,44,515	2,31,320	4,88,934	6,56,729	1,93,160	3,34,476	5,49,790	2,88,749	3,70,026	2,35,861	5,37,703	42,31,263
Forests ..	77,253	28,776	2,826	2,060	29,063	24,196	Nil	26,498	..	13,070	..	2,03,742
Barren and uncultivable land	21,063	9,528	13,775	22,268	11,046	12,531	16,671	7,821	15,164	8,468	14,171	1,52,506
Land put to non-agricultural use.	8,255	4,335	9,246	20,998	2,070	5,724	12,680	7,104	5,619	4,133	7,260	87,424
Total ..	29,318	13,863	23,021	43,266	13,116	18,255	29,351	14,925	20,783	12,601	21,431	2,39,980
Cultivable Waste ..	2,579	924	486	11,235	330	749	1,511	2,904	675	1,126	3,827	26,346
Permanent pastures and other grazing lands.	..	1,961	2,980	10,242	1,313	2,072	750	1,417	2,576	2,735	3,728	29,774
Land under misc. tree-crops, not included in area sown.	..	58	..	570	..	..	..	723	..	..	1,265	2,616
Total ..	2,579	2,943	3,466	22,047	1,643	2,821	2,261	5,044	3,251	3,861	8,820	58,736

TABLE I (*Continued*)

Category	*Badami*	*Bagalkot*	*Bagewadi*	*Bijapur*	*Bilgi*	*Hungund*	*Indi*	*Jamkhandi*	*Muddebihal*	*Mudhol*	*Sindgi*	*Total for the District*
Current fallows	10,645	6,639	1,361	45,751	1,905	2,360	38,353	3,862	3,182	4,503	7,524	1,26,085
Other fallow lands ..	..	..	7,782	..	130	2,588	2,844	113	..	377	6,480	20,314
Total ..	10,645	6,639	9,143	45,751	2,035	4,948	41,197	3,975	3,182	4,880	14,004	1,46,399
Net area sown	2,24,720	1,79,000	4,50,478	5,43,605	1,47,303	2,84,256	4,76,981	2,38,307	3,42,810	2,01,449	4,93,448	35,82,357
Area sown more than once ..	8,813	8,869	4,598	3,970	1,457	18,446	2,972	2,925	2,465	2,593	2,619	59,727
Total cropped area ..	2,33,533	1,87,869	4,55,076	5,47,575	1,48,760	3,02,702	4,79,953	2,41,232	3,45,275	2,04,042	4,96,067	36,42,084

TABLE II

Area under Food and Non-Food crops in Bijapur District from 1954-55 to 1959-60 *

(In acres)

Crops	1954–55	1955–56	1956–57	1957–58	1958–59	1959–60
1. Paddy	12,888	13,756	13,458	15,578	14,793	14,662
2. Kharif Jowar	2,63,091	3,17,994	2,90,011	2,92,318	2,74,108	3,40,476
3. Rabi Jowar	12,37,064	12,13,780	11,61,194	12,71,642	13,79,483	14,05,229
4. Bajra	5,95,296	5,46,765	5,26,291	4,96,273	4,82,624	4,53,890
5. Maize ..	4,956	4,897	4,466	4,492	4,863	5,483
6. Wheat	1,71,140	2,13,035	2,15,645	2,15,647	2,17,938	1,96,335
7. Other Cereals	29,449	26,544	23,368	29,990	22,832	22,266
8. Pulses	2,27,740	2,30,440	2,15,714	2,17,111	2,00,866	1,88,134
9. Sugarcane	1,778	2,106	2,458	2,298	2,632	2,873
10. Other food crops	18,245	18,232	17,711	18,022	18,097	19,233
Total for food crops (1 to 10) ..	**25,61,647**	**25,87,549**	**24,70,316**	**25,63,371**	26,18,236	**26,48,581**
11. Groundnut	4,22,844	3,89,241	4,41,326	4,65,067	4,27,310	4,34,137
12. Other Oilseeds	1,09,073	1,14,996	1,13,727	1,10,935	1,11,282	1,07,880
Total for Oilseeds (11 and 12) ..	**5,31,917**	**5,04,237**	**5,55,053**	**5,76,002**	**5,38,592**	**5,42,017**
13. Cotton	5,62,757	5,81,020	5,66,841	4,73,303	4,83,515	4,69,019
14. Other non-food crops	16,804	15,908	14,954	13,223	10,768	11,345
Total for non-food crops (11 to 14) ..	**11,11,478**	**11,01,165**	**11,36,848**	**10,62,528**	**10,32,875**	**10,22,381**
Grand Total (1 to 14) ..	**36,73,125**	**36,88,714**	**36,07,164**	**36,25,899**	**36,51,111**	**36,70,962**

* The tables on the next three pages give taluk-wise data for the years 1960-61, 1961-62 and 1962-63.

TABLE III

Taluk-wise extent of area under principal food and non-food crops in Bijapur District in 1960-61 (in acres)

Crops	*Badami*	*Bagalkot*	*Bagewadi*	*Bijapur*	*Bilgi*	*Hungund*	*Indi*	*Jamkhandi*	*Muddebihal*	*Mudhol*	*Sindgi*	*Total for the District*
Paddy	1,259	106	979	3,812	58	560	4,362	617	456	351	3,142	15,702
Kharif Jowar	35,920	44,019	33,260	3,926	20,153	68,199	..	5,094	83,496	17,638	31,334	3,43,039
Rabi Jowar	54,231	56,325	1,65,880	2,89,670	56,860	73,490	2,90,425	1,25,433	86,062	76,726	1,94,139	14,69,241
Bajra	1,39,990	11,478	77,470	99,927	15,465	5,854	50,048	39,280	36,318	26,324	96,614	5,98,768
Maize	15	20	963	456	218	Nil	379	1,402	156	1,588	454	5,651
Wheat	8,641	9,312	47,242	27,728	9,581	13,512	17,395	10,474	24,327	25,067	29,712	2,22,991
Other Cereals	6,893	833	628	445	369	8,250	920	103	661	206	683	19,991
Pulses	18,140	12,242	23,352	25,885	8,642	15,500	23,725	14,120	24,037	11,089	20,442	2,07,174
Sugarcane	94	45	89	1,090	31	26	752	635	29	448	308	3,547
Groundnut	43,167	17,108	39,969	33,893	9,702	22,433	49,825	16,232	23,009	18,124	55,488	3,28,950
Cotton	20,890	30,185	36,948	36,335	22,461	87,243	11,390	21,320	56,226	19,867	22,614	3,65,479

TABLE IV

Distribution of cropped area in Bijapur District (1961-62).

(In Acres)

Sl. No.	Taluk	Kharif Season		Rabi Season		Total Area					
		Area under food crops	Area under non-food crops	Area under food crops	Area under non-food crops	Under food crops		Under non-food crops	Total area under food and non-food crops	Area under double crops	Net cropped area
						Food grains	Fruits, etc.				
1	2	3	4	5	6	7		8	9	10	11
1.	Badami ..	1,21,667	36,601	47,892	21,641	1,68,973	414	58,243	2,28,216	4,094	2,24,122
2.	Bagalkot ..	72,452	49,158	63,984	34,507	1,36,686	250	49,158	1,85,844	6,345	1,79,499
3.	Bagewadi ..	1,56,930	40,319	2,00,510	56,783	3,58,133	693	97,102	4,55,235	3,238	4,51,997
4.	Bijapur ..	1,39,590	49,651	2,93,451	46,690	4,35,692	2,651	96,341	5,32,033	1,490	5,30,543
5.	Bilgi ..	44,100	11,219	66,312	26,323	1,10,530	118	37,542	1,48,072	970	1,47,102
6.	Hungund ..	97,069	23,467	87,759	89,328	1,84,923	95	1,12,795	2,97,718	15,185	2,82,533
7.	Indi ..	74,680	78,744	3,11,000	19,400	3,87,044	1,364	98,144	4,85,188	3,529	4,81,659
8.	Jamkhandi ..	52,645	17,547	1,47,988	22,427	2,01,400	767	39,974	2,41,374	3,084	2,38,290
9.	Muddebihal ..	1,26,604	24,122	1,09,948	82,480	2,36,696	144	1,06,612	3,43,307	4,714	3,38,593
10.	Mudhol ..	51,951	22,654	1,02,525	20,980	1,55,201	725	43,634	1,98,835	1,036	1,97,799
11.	Sindgi ..	1,85,834	1,00,819	1,70,556	44,742	3,57,049	659	1,45,561	5,02,610	3,107	4,99,503
	Total ..	**11,23,522**	**4,54,301**	**16,01,925**	**4,65,301**	**27,32,327**	**7,690**	**8,85,106**	**36,18,432**	**46,792**	**35,71,640**

TABLE V

Distribution of cropped area in Bijapur District (1962-63)

(IN ACRES)

Sl. No.	Taluk	Kharif Season		Rabi Season		Total under		Grand Total	Area under double crops	Area under fruit crops	Net cropped area
		Area under food crops	Area under non-food crops	Area under food crops	Area under non-food crops	Food crops	Non-food crops				
1.	Badami ..	1,12,927	47,160	51,869	25,737	1,64,796	72,897	2,37,693	10,020	169	2,27,673
2.	Bagalkot ..	73,301	10,796	65,783	37,016	1,39,084	47,812	1,86,896	6,503	192	1,80,393
3.	Bagewadi ..	1,58,036	18,338	2,09,902	65,525	3,67,938	83,863	4,51,801	2,365	513	4,49,436
4.	Bijapur ..	1,42,825	27,259	3,14,837	60,314	4,57,662	87,573	5,45,235	2,103	745	5,43,132
5.	Bilgi ..	42,999	8,257	68,894	29,014	1,11,893	37,271	1,49,164	1,200	74	1,47,964
6.	Hungund ..	96,869	16,665	89,231	96,917	1,86,100	1,13,582	2,99,682	14,892	60	2,84,770
7.	Indi ..	73,692	59,906	3,30,876	20,690	4,04,568	80,596	4,85,164	3,642	480	4,81,522
8.	Jamkhandi ..	48,949	13,314	1,54,090	26,743	2,03,039	40,057	2,43,096	3,303	322	2,39,793
9.	Muddebihal ..	1,20,170	18,020	1,22,057	84,702	2,42,227	1,02,722	3,44,949	4,922	44	3,40,027
10.	Mudhol ..	49,885	12,034	1,21,414	22,274	1,71,299	34,308	2,05,607	1,551	152	2,04,056
11.	Sindgi ..	1,56,195	36,663	2,39,224	65,391	3,95,419	1,02,054	4,97,473	12,826	266	4,84,647
	Total ...	**10,75,848**	**2,68,412**	**17,68,177**	**5,34,323**	**28,44,025**	**8,02,735**	**36,46,760**	**63,327**	**3,017**	**35,83,433**

TABLE VI

Standard and average yields of principal crops in Bijapur District (1963-64).

Sl. No.	*Crop*	*Standard normal yield per acre in lbs.*		*Average yield per acre based on Crop Estimation Survey results in lbs.*
		Irrigated	*Unirrigated*	
1.	Paddy (lean) ..	800	..	560.40
2.	Wheat ..	1,080	400	191.40
3.	Kharif Jowar ..	..	540	298.99
4.	Rabi Jowar ..	..	540	281.21
5.	Bajra ..	..	320	178.00
6.	Tur ..	..	960	275.90
7.	Gram ..	..	340	204.60
8.	Maize ..	900	..	478.30
9.	Cotton (lint) ..	350	80	50.40
10.	Sugarcane ..	70,000 (lbs. Cane) or 7,000 (lbs. Gur.)	..	42,000 in tons of cane
11.	Sesamum ..	..	400	220.00
12.	Linseed ..	..	360	174.20
13.	Groundnut ..	..	2,000 (Nuts in shell)	493.00 (Nuts in shell)

TABLE VII

Improved Seeds produced at Seed Multiplication Farms in Bijapur District in 1964-65.

Sl. No.	*Location of Farm*	*Variety of Seed*	*Quantity* qtl.	kg.	*Variety of seed (Wheat)*	*Quantity* qtl.	kg.	*Variety of seed (Groundnut)*	*Quantity* qtl.	kg.	*Grams Quantity* qtl.	kg.
1.	Bijapur ..	Rabi Jowar ..	140	64	Bijaga Yellow	47	96	....	..		15	29
2.	Mudhol ..	Rabi Jowar ..	71	28	Bijaga Red ..	12	22	Spanish Improved	4	17	6	00
		Kharif Jowar	5	40	Bijaga Yellow	16	50	Pondicherry—8	1	40	..	
3.	Madarkhandi	Rabi Jowar ..	33	92	Bijaga Red ..	10	62	Spanish Improved	6	79	0	50
		Kharif Jowar	17	19	Bijaga Yellow	12	19	....	..		..	
4.	Indi ..	Rabi Jowar ..	80	50	Bijaga Red ..	9	27	....	..		10	20
					Bijaga Yellow	21	85					
5.	Almel ..	Rabi Jowar ..	6	90	Bijaga Red ..	1	38	....	..		2	85
					Bijaga Yellow	5	35					

TABLE VIII

Progress of Soil Conservation in Bijapur District—Extent of area bunded since 1950-51.

(In Acres)

Sl. No.	*Name of Taluk*	1950-51	1951-52	1952-53	1953-54	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65
1.	Bijapur ..	..	285	7,522	8,162	2,517	2,041	3,175	1,507	2,633	1,795	2,341	2,108	1,942	2,210
2.	Jamkhandi ..	11	665	1,943	2,311	336	800	156	260	298	401	922	645	483	609
3.	Indi ..	133	922	2,192	6,750	846	2,690	3,475	4,781	4,406	2,630	3,606	2,682	3,555	4,168
4.	Sindgi ..	180	211	432	2,198	527	1,538	3,090	3,700	4,176	2,060	2,100	1,552	3,803	5,736
5.	Bagewadi ..	..	259	427	836	429	7,370	3,060	2,888	5,067	7,113	4,856	2,366	1,752	2,723
6.	Muddebihal ..	266	106	..	655	..	1,092	1,488	1,410	2,567	1,228	1,693	1,609	1,176	1 352
7.	Bagalkot ..	205	360	460	..	71	..	..	121	1,075	546	256	884	313	682
8.	Hungund ..	98	30	30	..	569	..	1,268	708	956	1,365	1,122	516	466	741
9.	Badami ..	195	1,522	4,567	6,907	4,095	..	2,712	2,218	6,047	5,268	1,712	1,742	327	489
10.	Bilgi ..	562	425	500	67	..	..	..	..	..	..	..	..	..	..
11.	Mudhol ..	59	1,196	2,870	6,358	552	..	317	156	..	..	..	..	..	..
	Total ...	**1,709**	**5,981**	**20,943**	**34,244**	**9,942**	**15,531**	**18,741**	**17,749**	**27,225**	**22,406**	**18,608**	**14,104**	**13,817**	**18,710**