

**CHAPTER IV**  
**AGRICULTURE AND IRRIGATION**

**50. Tracts of fertility**

The Mahanadi is a prominent natural feature of the district. It flows through it from the north-west to south-east and forms generally the boundary between Bargarh and Sambalpur subdivisions. The Sambalpur subdivision does not have any large plains which the Bargarh subdivision has. The chief areas of cultivation lie along the banks of the Mahanadi, the valley of the Ib river, in the valleys and glens of Garh Loising and Jujomura and in the flat but well-wooded country to the east of the Sambalpur-Jharsuguda road. To the west of the Mahanadi lies the whole of the Bargarh subdivision, the greater portion of which is an open plain, of great natural fertility, under close cultivation. It is drained by Danta and Jira rivers—two tributaries of the Mahanadi and also by a number of other small tributaries which are, however, of little use for irrigation. The low lands are generally cultivated with rice, and are skilfully embanked, manured and irrigated. The uplands are much less carefully cultivated, are not embanked, and grow miscellaneous crops, such as pulses, sessamum, coarse rice and cotton. When the ground is newly broken, good crops are secured for several years with very little labour and no manure ; but the soil is speedily exhausted and chance cropping is the rule in all the more closely settled tracts. In soil and lie of surface the western portion of the district, comprising Bargarh subdivision, is inferior to the country lying round Sambalpur and to the north of the Barapahar hills. In the open areas of Deogarh and Kuchinda subdivisions large and prosperous villages with good tanks for irrigation are met with. The Rairakhol subdivision, is mostly forest interspersed with fertile valleys and patches of agricultural land.

**51. Land Utilization**

The district has a total geographical area of 43,30,000 acres (17,52,000 hectares). About 44 per cent of this area is utilized for agricultural purposes. The statement \* below gives a picture of land utilization in the district (1961-62).

	Acre	(Hectare)
(1) Total cropped area ..	19,36,000	(7,83,000)
(2) Area sown more than once ..	1,82,000	(74,000)
(3) Net area sown ..	17,54,000	(7,10,000)
(4) Area not available for cultivation.	9,05,000	(3,66,000)
(5) Other uncultivated land (excluding fallow).	5,22,000	(2,11,000)
(6) Total fallow land ..	4,07,000	(1,65,000)
(7) Forest ..	7,33,000	(2,97,000)

\* Statistical Abstract of Orissa, 1963 pp. 582-594

## 52. Irrigation

In the past, irrigation in the district was done mostly by tanks. This was due to suitability of the district for tank-making. The Imperial Gazetteer (1908) mentions it in these words: "In 1903-04 the irrigated area was only 31 square miles, but in the previous year it had been over 196, being the maximum recorded. With the exception of 12 square miles under sugarcane and garden produce, the only crop irrigated is rice. It is not too much to say that the very existence of villages over a large portion of the area is dependent on the tanks which have been constructed near them. There are 9,500 irrigation tanks, or between three and four to every village in the district on an average. The ordinary Sambalpur tank is constructed by throwing a strong embankment across a drainage line, so as to hold up an irregular shaped sheet of water. Below the embankment a four-sided tank is excavated, which constitutes the drinking supply of the village. Irrigation is generally effected by leading channels from the ends of the embankment, but in years of short rainfall the centre of the tank is sometimes cut through. Embankments of small size are frequently thrown across drainage channels by tenants for the benefit of their individual holdings. The Jambor and Sarsuitia Nullahs near Machida are perennial streams, and the water is diverted from them by temporary dams and carried into the fields. In certain tracts near the Mahanadi where water is very close to the surface, temporary wells are also sometimes constructed for the irrigation of rice. Irrigation from permanent wells is insignificant".

By 1931, the position further improved. An area of about 221,347 acres (89,646 hectares) was brought under irrigation from tanks and wells. The number of tanks swelled to 12,282. The increase in the irrigated area was most remarkable in Bargarh ex-Zamindari areas where 47,784 acres (19,353 hectares) of rice land could get irrigation compared with 28,205 acres (11,423 hectares) twenty years back.

The following is an interesting account from the Sambalpur District Gazetteer (1932) which highlights the difference in the methods of irrigation adopted by the Agharia and Kultha cultivators.

"There is a great difference between the methods of irrigation practised by the Agharia immigrants from Chhatisgarh, who have settled in the flatter riparian tracts to the north, and by the Oriya Kultas, who prefer a comparatively undulating country. The Agharia works only on rich soil, and this he finds in the level tracts which the Kultha avoids. The latter depends almost entirely on his water-supply, and likes rolling country with surface drainage and shallow sub-soil water. The Agharia is a poor tank-builder and constructs only the shallow square tank commonly used in Rajpur and Bilaspur which gathers no surface drainage, depends altogether on direct rainfall, and fails in a year of short rainfall. One glance at a stretch of rice-fields suffices to distinguish

**Kulta** from Agharia cultivation. The former builds only low and narrow banks between his fields, seldom more than two feet high, because he has frequently to cut them in order to pass his irrigation water from plot to plot. The Agharia builds high field boundaries, making a tank of each field, because each must catch and keep its rainfall. The two systems suit the tracts to which they are applied. In any ordinarily favourable year the Agharia reaps the heavier crop, but in a bad year he loses more than the Kulta does."

Water is a far more important factor than soil, and an ample and well-distributed rainfall is a matter of vital importance to cultivators. In most years the amount of rainfall is sufficient, the average being about 58" per annum, but it is often unevenly distributed, and deficiency in the critical months is fatal to crops. So artificial irrigation is absolutely necessary. Before the completion of the Hirakud Dam Project, the main source of irrigation was the tank. The tanks were of three kinds—Kata, Munda and Bandh. From these sources, about 148,000 acres (59,940 hectares) of land are irrigated.

(i) **Kata**

An ordinary irrigation tank, which is known as a Kata, is constructed by throwing a strong earthen embankment, slightly curved at either end, across a drainage line, so as to hold up an irregularly-shaped sheet of water. The undulations of the country usually determine its shape as that of a long isosceles triangle of which the dam is the base. It commands a valley, the bottom of which is the Bahal land and the sides of which are the *Mal* terrace. As a rule, there is a cutting high up the slope near one end of the embankment. From this the water is led either by a small channel or Tal, or from field to field along the terraces, down which it finds its way to the lower land. In ordinary years, irrigation may be entirely unnecessary and in that case the superfluous water is passed along until it falls into the *nullah* in which the small valley ends. In years of short rainfall the centre of the tank is sometimes cut through, when the bottom lands need irrigation, but in ordinary years such an expedient would be dangerous, for the water is deepest at the centre and no sluices are used. Such tanks supply water to at least 5 acres (2.025 hectares) and usually to an area of 30 to 300 acres (12 to 121 hectares).

(ii) **Munda**

The Munda is an embankment of smaller size across a drainage channel. Embankment of this sort are very common, as they can easily be constructed by the Raiyats themselves for the benefit of their own holdings. These men have perhaps a few fields commanded by the main village tank, but have built Mundas to protect their outlying fields, more recently acquired from others or reclaimed from the waste. For its purpose the Munda is useful, for if a failure of rain is not very serious,

it may provide water enough in the later months of growth to save the crop. But it is necessarily shallow and cannot give more than a certain supply.

(iii) **Bandh**

The Bandh is a four-sided tank excavated below the Kata, from which it derives its water by percolation. They are almost invariably used for drinking purposes only, are properly regarded as suitable monuments of piety or charity, and are invariably consecrate or married to a god. Apart from their obvious sanitary advantages, they add to the irrigated area by spreading percolation and by rendering it possible in years of drought to empty the irrigation tank completely.

(iv) **Wells**

Apart from tanks, the district has special irrigational advantages in the wells. Its sandy soil holds in most places a plentiful store of sub-soil water at no great depth (15 to 29 feet) from the surface. Such wells hold water through the hot weather and are largely used for the irrigation of sugarcane plots. Temporary wells are also sometimes used for the irrigation of rice in the tracts near the Mahanadi where water is found close to the surface. Over 10,000 acres (4,050 hectares) of land get irrigation from wells.

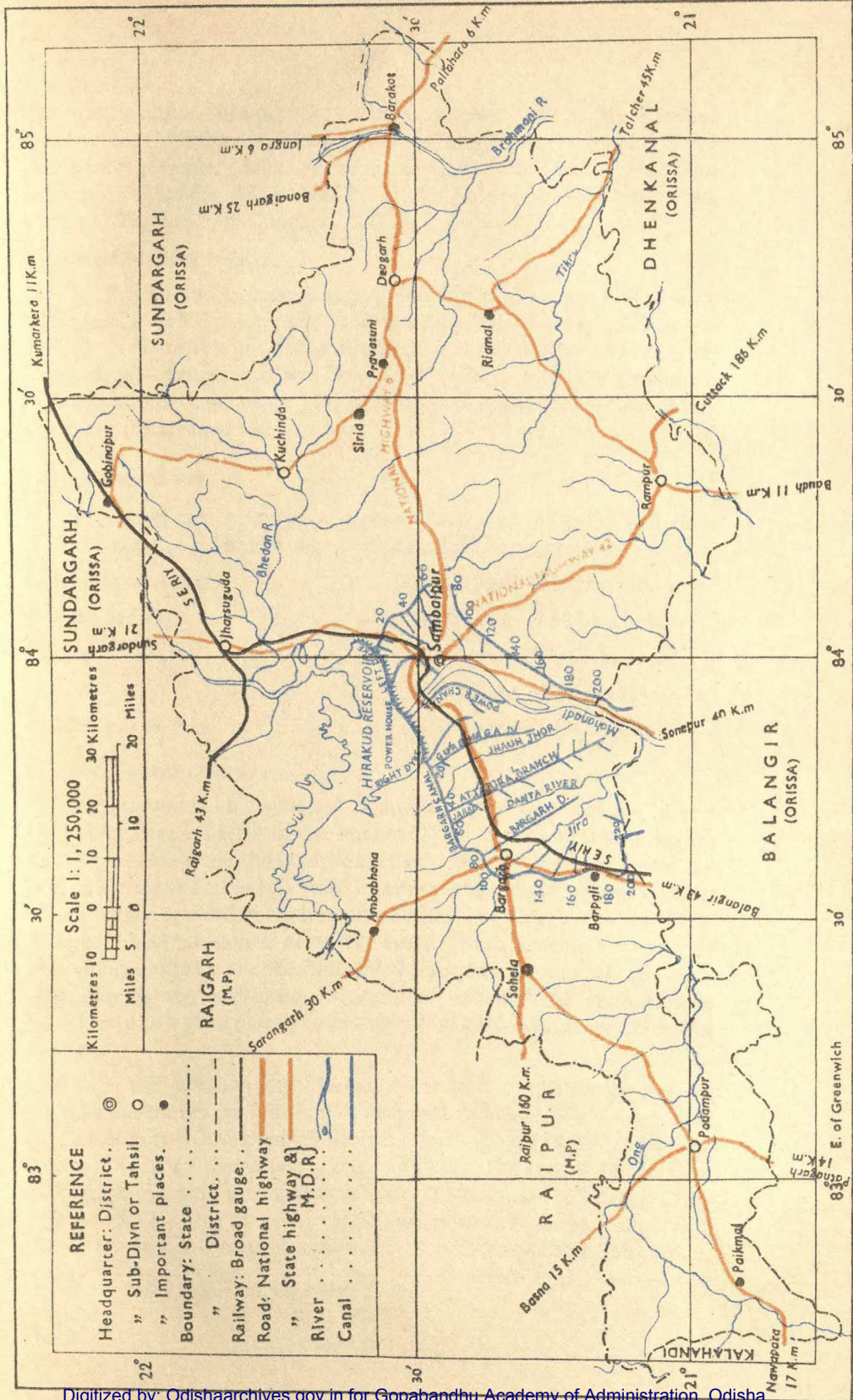
(v) **Other means of irrigation**

Other means of irrigation are of little importance. At places, irrigation by *nullahs* is taken recourse to, by means of which the water is diverted and carried into the fields. For raising water from a lower to a higher level the common lever lift called *tenda* is used. This consists of a long pole poised between two uprights and weighted at its lower end, and is used invariably whether water is required from a well or from a tank. If there is only a small difference of level, baskets (*Sena*) worked by two men are often used.

(vi) **Canal irrigation**

The construction of the Hirakud Dam makes a great landmark in the system of irrigation in the district. The irrigated area has substantially increased. The canals of this Dam, which irrigate this district as well as the district of Balangir, consists of three main canals, namely, the Bargarh Canal, the Sason Canal and the Sambalpur Canal having a total length of about 90 miles (145 Kms.) with 490 miles (789 Kms.) of distributaries and minors. The water reaches the field through a net work of water courses of about 1,800 miles (2,898 Kms.) in length. Water from the Hirakud reservoir flowed into the Bargarh Canal and Sason Canal in July 1956 and water was available for irrigation in September, 1956. These canals irrigate about 351,000 acres (142,155 hectares) of land in the district for raising Khariff and Rabi crops. These provide irrigation in July, that is, at a time when rainfall is usually irregular and water is much needed in the fields. Hitherto,

# IRRIGATION MAP OF SAMBALPUR DISTRICT



the people could not practise double-cropping. After the Hirakud Dam made irrigation available to an extensive area of land, two crops are possible. Also, a large area of uncultivable land has become cultivable. More details about the project have been given under "Hirakud" in Chapter XIX.

**(vii) Minor Irrigation Projects**

So far, 64 minor irrigation projects, having an irrigated area of 9,757 acres (3,952 hectares) have been constructed. In addition to this, 26 such projects are under execution and the designed ayacut (irrigated area) of these projects are over 10,000 acres (4,050 hectares). A full list of all these minor irrigation projects is given at the end of this Chapter (Statement I).

**(viii) Irrigated area**

According to statistical reports <sup>1</sup>, the total irrigated area from various sources is 528,662 acres which is split up as follows:—

Government canals	..	351,329 acres (142,288 hectares)
Private canals	...	4,750 acres (1,924 hectares)
Tanks	...	148,097 acres (59,978 hectares)
Wells	..	10,668 acres (4,321 hectares)
Other sources	..	13,818 acres (5,596 hectares)

**53. Soil Conservation**

Soil erosion is an important factor that affects agriculture. From the survey data collected in the Hirakud Dam catchment area, it appears that 75 per cent of the idle land would need special conservation measures like planting of trees and grass, contour ploughing, pitting, contour trenching and protection against uncontrolled grazing. The problems of stream bank erosion is also very acute. Each year good crop land and villages situated on the bank of the streams are eroded. So their protection is very important. Control of stream-bank erosion could be achieved to a great extent by planting of suitable species in the eroded banks.

Two soil conservation schemes have been implemented namely, (i) Demonstration in Hirakud Catchment and (ii) Soil Conservation in Community Development Blocks. The former which is Government of India's Scheme was started in 1961. The area of the Hirakud catchment lying in this district is about 2,500 square miles (6,475 Sq. Kms.). So far, 14,705 acres (5,955 hectares) have been treated with different erosion control measures. Soil Conservation Subdivisions

1. District Statistical Hand-Book, 1962

have been created at Jharsuguda and Kuchinda for planning and execution of erosion control work in the water-shed. The details of work have been shown in the following table:—

Soil Conservation Measures	Area (in acres)
Contour bunding	.. 11,845 (4,797 hectares)
Tree planting	.. 2,207 (894 hectares)
Pasture development	.. 369 (149 hectares)
Control of erosion	.. 236 (96 hectares)
Stream-bank protection	.. 49 miles (79 Kms.)
Silt retention structures	.. 4 Units
Sisal plantation	.. 275 acres (111 hectares)

#### 54. Soil

The black soil which forms so marked a feature in the adjoining districts of Madhya Pradesh is rare in Sambalpur. It occurs in the north-west of the district beyond the range of Vindhyan sandstone which shuts off the Ambabhona valley, and across the Mahanadi towards the Bilaspur border. The soil which covers the greater part of the country is apparently derived from underlying metamorphic rocks, and the differences found in it are mainly due to the elimination and transportation effected by surface erosion. The finer particles are carried into the low-lying areas along drainage lines, rendering the soil a clayey texture and leaving the uplands light and sandy.

##### Kharipani

Is the most valuable land in Sambalpur district. As it receives the drainage of the village both by surface flow and by seepage, crops never fail. The water which flows through the village carries with it all the manure which is deposited in the village by men and cattle. In 1952, the Chief Editor who was then Food Commissioner made an investigation of village Sarasara in Bargarh subdivision and published a pamphlet with photographs showing that a 2-acre plot of Kharipani produced 50 Maunds (1,899 Kgs.) of paddy per acre with ordinary seeds and no chemical fertiliser. In 1951 improved seeds developed in Seed Farms in Orissa and fertilisers were used and the produce per acre was 126 Maunds (4,787 Kgs.).

Kharipani occurs in every village in Sambalpur district. On account of the undulating nature of the country, people built their houses on the highest land. In most villages, cultivated land slopes away from the house-site, and the cultivators direct the drainage to their paddy fields.

The word Kharipani does not occur in coastal districts of Orissa where the land is not undulating. The corresponding description of the land which received the drainage of houses is known as Bari and is ordinarily used as kitchen garden whereas Kharipani in Sambalpur district is almost always paddy growing.

#### Soil classification

The most usual classification of the soil of the district is based on their position or level. This is an important consideration to the cultivator, since the country is undulating, except along the banks of the larger rivers, and consists of ridges and slopes and of the depressions between them. The Mahanadi broadly divides into two regions. There are mountains on the north-east and south-west borders. The land slopes from north-east to south-west in the northern region and from south-west to north-east in the southern region finally meeting the Mahanadi. The following types of soil are predominant in the district :

- (i) Red forest soil, (ii) Brown forest soil, (iii) Sandy soils, (iv) Clay loam and clay soil, (v) Black cotton soil.

#### (i) Red Forest Soil

This soil is found extensively in Rairakhol, Deogarh, Jamunkira (Jamankira), and Gobindpur Blocks of the northern region. It is rich in organic matter and is porous, and suitable for forest growth as well as for citrus and mango orchards. Sessamum and Arhar also grow.

#### (ii) Brown Forest Soil

It is found in Kuchinda Block and in a part of Rengali Block. The colour is brown and contains low organic matter. The soil obstructs free drainage. Generally scrub jungles grow well, so also pulses and millets. The soil is suitable for the growth of fruit trees like mango, *bel* and *sapeta*.

#### (iii) Sandy Soil

The soil is prevalent in high-lying or *At* and *Mal* lands on a watershed and is dependent on rainfall. The soil is coarse and contains low organic matter. Sand is there in a considerable measure. Groundnut and pulses (Mung, Biri and Kulthi) are grown. *At* lands are used for crops which are less dependent on moisture. Throughout the district, there is more variation in the unembanked *At* land growing light miscellaneous crops than in the rice land. Its soil in a closely cultivated tract is often little better than exhausted sand or gravel. In hilly wooded country it is more fertile. On the banks of the larger rivers, it resembles good silt. Paddy grows on *Mal* lands. The term



*Mal* is used for the slopes which are terraced to catch the surface drainage coming down from uplands. The lower terraces are wider and deeper than the upper, and cultivators carefully recognise the great difference in fertility and security of cropping between them, even distinguishing seed varieties for *tikra* (high) *mal* and *saman* (level) *mal*. The higher *mal* lands are light and dry, yielding light early crops which receive little more attention than the chance crops on unembanked *At* land. The lower *mal* lands, called *Pita mal*, get excellent drainage and grow good varieties of rice.

#### (iv) Clay Loam and Clay Soils

This category of soil is found in most of the *Berna* lands of the cultivated tract. The term *Berna* denotes lands towards the bottom of a depression, which receive the drainage from the slopes on either side and also from drainage line between them. *Berna* lands vary considerably according to their steepness and the stage of their development. In land newly broken up they are liable to have sand and gravel washed into them, but where it is under close cultivation the embankments of the terraced slopes prevent this. *Bahal* is a term used for flat land at the bottom of a depression or drainage line, the chief distinction between *Berna* and *Bahal* being that the former is narrow and steep and the latter wide and level. The best *Bahal* lands are served by large reservoirs, and so are secure from crop failure. The clay-loam soil contains various percentage of organic matter from different types of parent rock. In the northern range large percentage of mica is found. The soil is most found in Rengali, Jharsuguda, and Laikera areas. Another type of clay soil having high percentage of calcium is found in the Sambalpur Community Development Block area. The clay soil that occurs in the Riamal, Naktideul, Padampur, Paikmal, Bijepur, Bhatli, Ambabhona, and Gaisilat areas are rich in organic matter contents. The main crop is paddy.

#### (v) Black Cotton Soil

The soil is found in Dhama and Paikmal areas. It contains liberal amount of organic matter. During Khariff, paddy is generally grown and onion and sugar-cane during *Rabi*, under irrigated conditions. Mung and gram are grown as non-irrigated *Rabi* crop.

### 55. Principal Crops

The principal crops of the district are paddy, pulses (mung, biri, kulthi), oil-seeds (groundnut, til, mustard, castor), sugar-cane, millets and wheat. The total cropped area is about 1,485,000 acres (601,425 hectares). The area under different crops and their yield-rate are given at the end of this Chapter ( Statement II ).

## (f) Paddy

Paddy is the staple crop of the district, occupying about 84 per cent of the total cropped area. Regarding varieties there is a local saying<sup>1</sup>.

ମନୁଷ୍ୟର ନାମ୍ନ ଦେବେ  
ଅନୁର ନାମ୍ନ ଚାଷେ ଉଣା ଦେବେ

Which means :

As many names as man has,  
Has paddy only one less.

It is worthwhile to quote the following account on paddy varieties from King's Gazetteer<sup>2</sup>—“The cultivators state that there are over 300 varieties of seed in use, and the Inspector of Agriculture, who is in charge of the agricultural farm at Sambalpur, claims to have collected 250 varieties from the villages of Attabira, Sason and Bargarh Thanas. The varieties are most simply classed by the position of the fields on which they grow most successfully, viz., as *bahal*, *berna*, *mal* and *at* rices. For example, a *bahal* variety will fail on upper *mal* terraces, and on the other hand *mal* varieties will rot in the wet *bahal*. These main classes are further subdivided into several minor groups.

“Among *bahal* rices *jhilliparagi* and *chinamal* need deep, well-cultivated, well-manured, and very wet land, while *kakudibija* and *mative*, a most sturdy plant, will grow well at the bottom of any depression, and are commonly sown in the newly cleared land of jungle villages. Similarly, among *berna* rices, *baulkera* will grow only in the lower fields of a depression, while *tamdia* and *mugdhi* will do well on any *berna* field. The lower terraces of *mal* land will grow some of the sturdier *berna* varieties, but the favourite seeds are *banko* and a large family of striped or barred seeds. The uplands and the upper terraces grow coarse grains, usually black-husked. The colour distinction is said to be a good one, so far as it goes, because most of the best varieties are white-husked, the *mal* rices, which form the bulk of the crop, are reddish, and the coarse upland varieties are black. Commercially, only two classes are generally recognised, viz., the finer varieties, which can be husked readily after sun-drying, and the coarser, which have to be first parboiled or steamed and then dried. These are known as *arua* and *usuna* rice”.

#### Methods of Paddy cultivation

The greater part of the paddy is sown broadcast. Only a small portion is transplanted. Transplantation is more marked in the Bargarh plain. As in other parts of India, there are three common ways of sowing broadcast, that is, dry sowing just before the rains break (*khardi*),

1. Settlement Report of Sambalpur district, 1926

2. Sambalpur District Gazetteer (1932) by F. C. King, P. 132-33

sowing after the rains have broken and the ground is wet (*batri*), and sowing late with seeds previously germinated by soaking in water (*achhara*). The following description of the methods of cultivation is taken from Dewar's Settlement Report, 1906.

The amount of ploughing done before sowing time depends largely on the method of cultivation which is to be adopted, but it is usual to plough up all fields at least once before the rains break in June. Harvesting finishes by the end of November. Sometimes, in the case of low-lying *bahal* lands, it is not concluded till December. And as soon as threshing is over, the cultivator ploughs up his *bahal* fields to turn in the stubble. But the *mal* terraces reaped early in October dry up and harden very quickly, and cannot be touched, unless, as is often the case, heavy showers fall in January or February. The bulk of the work is left for the hot summer months, when heavy storms of thunder and rain usually break once a fortnight, and give the cultivator his chance to plough. It is then too that manure is spread and worked in.

(a) **Khardi**

The method of sowing known as *khardi* necessitates much preliminary ploughing, and is applied chiefly to bottom lands, which retain moisture long enough after harvest to admit of effective pulverisation. It can also be used on sandy upland soils, which soak readily after summer showers. The seed is sown broadcast a fortnight before the rains break or usually at the beginning of June. If the coming of the monsoon is delayed, and more showers fall, the seed germinates and dies. If the monsoon is ushered in with a heavy downpour, the seed is liable to be washed out, and this is one reason why the *khardi* method cannot be employed on steep terraces. Its advantages are that, if successful, it gives an early ripening crop, and it leaves the cultivator free for the sowing of his other land by other methods after heavy rain begins. The method is very popular among the people, especially having larger holdings, who find it convenient to set apart certain portions for *khardi*. About one-third of the total paddy area is covered by this system of cultivation.

(b) **Batri**

The most popular is the *batri* method, because it is applicable to the *mal* fields, which constitute the bulk of the rice land. These *Mal* fields bake after harvest to a brick-like hardness, and can be but lightly scratched until the monsoon has set in. They are then given a deeper ploughing and the seed is sown at once, usually in the beginning of July.

(c) **Muka**

The *muka* method may be applied to any embanked field, but most suitable to the lower plots of a *berna* dell. These have been lightly ploughed beforehand, when the rain comes in earnest they are flooded

deeply, the plough is put through water and mud, and the seed is sown on the thin slush thus worked up. After two days the water is gently drained off.

(d) *Achhara*

The *Achhara* method is an elaboration of *muka*, which can be applied to all fields with good embankments in a low and level position. Pre-monsoon ploughing is unnecessary. On the first full fall of rain the fields are flooded, and the plough is put twice through the water and mud. Four or five days later, the water is drained or scooped off, care being taken to leave no pools. The soft sediment is ploughed once more to break the remaining clods, and is then levelled with a board. Meanwhile, the seed has been germinated by being soaked in water for a day and a half, and then spread in baskets for another day. It is often put in by hand. If through carelessness any water has been left on the *achhara* field, the seed sown in this advanced condition will rot. It is necessary for success with both *muka* and *achhara* that the monsoon should be ushered in with heavy rain.

(e) *Bihura*

In the case of broadcast paddy, an important operation known as *bihura* is necessary early in August, when the plants are about a foot high. It consists simply in running a light plough up and down the field, thus uprooting a large preparation of the plants and leaving the rest sticking loosely in the mud in all directions. The effect is to kill off weeds and aerate the soil, besides thinning the plants. It is necessary that there should be from 4 to 6 inches of water in the fields, and if there is not, the cultivator must either irrigate or wait through the long droughts that occur in this month until sufficiently heavy showers fall. The operation is calculated to hasten growth on a sandy soil and obviate the danger which would result from a failure of the later rains. A crop thinned at an early date and then refreshed by light showers is secure, it will stand a long drought and yield a crop even if September be rainless. But if the first chance is missed and *bihura* is not accomplished until late in August, any shortage of the September and October rain will ruin the crop.

No other operations, except weeding in August and irrigation in bad seasons, are necessary until the crop is ripe. Cutting begins early in September for the coarse rice of the uplands, and on the Mal terraces it is usually finished in October. The heavier *berna* and *bahal* crops are reaped in November. In the case of low-lying *bahal* lands, harvesting sometimes does not take place till December.

**(ii) Pulses**

Of the pulses grown in the district, by far the important are *Biri* (*Phaseolus-radiatus*) and Mung (*Phaseolus Mungo*). Khesari, Bengal gram, Horse gram (Kulthi) and Field pea are also grown. *Biri* is generally grown in the *khariff* season, while other pulses are grown in the *rabi* season. The methods adopted for cultivation of Mung, *Biri*, gram and Kulthi are almost similar. Land is ploughed 2 to 3 times and then planked with the help of a ladder. Furrows are opened and farm-yard manure is applied at one foot gap. Seeds are then sown on the manure pockets. Ploughing is once more done to cover up the seeds and manure. Mung is grown largely in the *rabi* season. After the availability of canal irrigation, it occupies as a *rabi* crop a large portion in the canal irrigated areas. Field pea and *khesari* are sown broadcast in December in low-lying paddy lands, when there is standing crop. Paddy is harvested leaving high stumps. The stumps are left out for field pea and *khesari* to trail to it.

**(iii) Oil-seeds**

The important oil-seeds of the district include groundnut, sessamum (til) and castor. Of these, groundnut occupies the largest area of cultivation. It is grown in a large scale in Bargarh and Sambalpur subdivisions. The cultivation of sessamum is met with mostly in Kuchinda, Deogarh, and Rairakhol subdivisions. As we find in the last Gazetteer<sup>1</sup>, sessamum was previously the principal oil-seed grown on 60,535 acres (24,517 hectares) and that "it is sown on uplands and is commonly the first crop taken from newly-broken land, where it gives a large yield, but it is also grown on very poor soils". But later, its cultivation declined due to the fact that in many parts upland paddy was grown where sessamum used to be grown formerly. This crop is now second in importance. Castor is grown, in a very limited scale, on tank bunds and contour bunds. Groundnut is cultivated in *khariff* and *rabi* seasons. Generally two varieties are grown, namely, bunch and spreading varieties. The former is gaining more popularity. The method of groundnut cultivation includes preliminary cultivation, opening of furrows at a distance of 1'—1½', placing of seeds in the furrows at a distance of 6"—9" and then harrowing to cover the seeds. When the plants are twenty days old, the first hoeing and inter-cultivation are given. The plants take flower 15 days after the first inter-cultivation. The harvesting takes place after 3-4 months.

**(iv) Sugar-cane**

The district grows sugar-cane of high quality. The Sambalpur District Gazetteer of 1932 states:

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1. Sambalpur District Gazetteer (1932) by F. C. King.—P. 136

“Next to rice, sugarcane is perhaps the most important crop grown in the district. for though the area it covers is small, it is tending to increase and the value of its produce is very considerable. In the course of the 20 years preceding the last settlement, the area under this crop had grown from 3,694 acres to 6,287 acres, an increase of 70 per cent. Twenty years ago, the only varieties of cane commonly grown in the district were *bangla* and *tandi*, but at present many other varieties have been introduced. The variety known as *khari* has become very popular, and the Agricultural Department is endeavouring to introduce the CO 213 cane from Coimbatore, which needs little irrigation, is not attacked by jackals and yields abundant juice producing very fine sugar.

“Sugarcane is grown, as a rule, not on special soils, but on any plot that can be easily irrigated. Land on which sugarcane is grown is called *barchha*. Formerly certain areas so situated as to be easily irrigated from the village tanks were permanently appropriated for sugarcane cultivation, and the cane was grown in common by all the villages. The practice of growing sugarcane on common *barchha* land has gradually disappeared. Now the cane is generally grown on scattered plots held by individual *rayats* and watered from tanks or by lift irrigation from wells.

“The cane is sown in March or April and cut in December, January and February. An acre of sugarcane will produce 40 or 50 Maunds (1,519 or 1,899 Kgs.) of gur, which is sold at Rs. 7-8-0 a Maund. There are no sugar factories in the district, but the tenants press the cane themselves in their own mills. There are two factories in Bargarh, which turn out cast-iron cane pressing mills, and these mills are in use all over the district, but the primitive wooden mill can still be found in many villages, especially in Sambalpur subdivision where wood is plentiful, and the mills can be obtained cheaply. Pressing generally takes place between sunset and sunrise, and the groaning and creaking of the rollers can be heard throughout the length and breadth of the district during the cold winter nights. The juice is boiled either in earthen pots or iron pans”.

Mr. F. Dewar gives the following interesting sketch of the history of sugarcane cultivation in the district in his Settlement Report\* (1906):

“Sugarcane is the most valuable crop grown in the district, and at last settlement it ranked second in general importance to rice. But its area has fallen from 6,473 acres (2,622 hectares) to 3,693 acres (1,496 hectares). From 1890 it steadily declined till 1897-98, but since that

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\* Sambalpur District Gazetteer (1932)—By F. C. King, pp. 137-138.

year it has again increased, and at present is rapidly extending. The causes of this change are curious and illustrate the general changes that have been taking place in the district.

“Before the railway came, the cultivation of cane ranked second only to that of rice, which it supplemented by providing work for farm labourers throughout the spring and hot weather. There was then little export of grain, but *gur*, being a less bulky commodity, was one of the principal articles of trade. Each village grew all its cane in common on land provided by the headman in the proximity of the principal tank. The cost and labour of fencing were shared by all, and the crop was cheaply produced. But as soon as the railway was opened, outside competition checked the trade in *gur* and at the same time doubled the profits of rice. It had been customary, even in years of comparatively short rainfall, to conserve half of the water of the principal village tank for cane irrigation in the hot months. It now became more profitable to use all the available water on the rice crop. One other cause at work was the increasing scarcity of fencing materials in the open tracts. Mud walls proved an inefficient protection against jackals, and even where cultivation continued, and inferior hard cane took the place of finer varieties. In the zamindari villages, though these are exposed to damage by pig and bear, fencing material is abundant, and the decline of the area under good cane has been less marked. After 1890—1900, the first rush for rice profits was over, and the price of rice, much inflated by bad seasons in the Central Provinces since 1895, became more steady. In some villages the cultivation of cane on the common land has been resumed, but in most cases the old custom has died out, and cultivators dig wells on their own holdings and work independent plots. Its expenses are heavy, but the crop provides for the consumption of the district, and in recent years the export of *gur* has recommenced on a small scale. It is not likely to develop rapidly unless there is some improvement in the present primitive methods of crushing the cane and of boiling down the juice”.

Irrigation from Hirakud Dam provides the crop ample scope and facility. A sugar factory is being set up at Bargarh.

#### (v) Vegetables

The important vegetables are potato, cabbage, cauliflower, knolkhol, lady's finger, tomato, brinjal, peas, cucurbits, potol, radish and turnips. Potato is grown in winter. After harvesting of *khariif* crop, the land is prepared for its cultivation. Then furrows are opened at  $1\frac{1}{2}$ ' intervals. Here the tubers are planted. Hoeing, weeding and manuring (top dressing of nitrogenous fertilizers), and earthing are done after twenty days. It needs irrigation 8—10 times at 10—15 days interval. The harvesting takes place after five months. Cole crops, such as cabbage

and cauliflower, are grown in a large scale in the *rabi* season. Land is ploughed 3-4 times in order to get a good tilth, after which transplanting of seedlings is done. Manure is applied before transplantation.

#### (vi) Fruits

On fruit-cultivation in the district, we get the following account from the King's Gazetteer (1932)<sup>1</sup>: "The light sandy soil of the district is most favourable for the growth of fruit trees, of which *mahua* (*Bassia Latifolia*) is not only the most common, but also the most important. Its flowers are of great value as a food to the people generally and especially to the aboriginals, by whom they are dried in the sun and stored throughout the year. They are also used for fattening cattle and for making spirit, while the fruit produces a thick oil used by the poorer classes for lamps, as well as the adulteration of *ghi*. Fine mango groves are to be seen in every part of the district, while the *tal* palm and the *khajur* or date palm are common on the banks of tanks. They are cultivated for the sake of their fruit, the kernel of the former being used with rice flour for making cakes. The guava is cultivated on the banks of *nullahs* in many villages, in the Bargarh plain, and the tamarind and jujube are fairly common. Other fruits, such as the orange, lemon citron, plantain, pine apple, pomelo, pomegranate, jack-fruit, leechi and rose-apple grow well".

During 1968-69, a total area of 6,058 hectares were under cultivation of various fruits. For details, see Statement II appended to this Chapter.

#### 56. Agricultural Implements

Agricultural implements are generally antiquated. The ploughs are made of relatively superior wood, and this was possible because of the large forests around. Traditional implements still persist, though improved ones are becoming popular. The cultivators are showing interest in modern implements now for reasons of economy and efficiency. Of the modern implements now in use in the district, Rotary Paddy Weeders, roller type of paddy threshers, hand compression sprayers are popular among the cultivators. By far the most important agricultural implements are wooden plough, ladder, yoke, *kurda*, *phourah*, *kodali*, pick-axe and harrow.

#### 57. Seeds

The cultivators take care for production of quality seeds and seedlings. They prepare and store paddy seeds thus: after harvesting, the crop is dried thoroughly and then threshed. It is further dried in the sun for 2 to 3 days. The seed is then stored in straw containers.

<sup>1</sup> Sambalpur District Gazetteer (1932)—By F. C. King—pp. 138 139.



*Mung, Biri and Kulithi* seeds are put in the sun until they get thoroughly dried. The seeds are then stored in straw containers and some quantities of *Neem* (*Margosola*) leaves and ashes are mixed therewith as a precaution against pest attacks. For preservation of seeds, the cultivators also make use of Central and State warehouses and cold storages. The following table shows the quantities of improved seeds distributed to cultivators:

Crop		1965-66 (in Kg.)	1966-67 (in Kg.)	1967-68 (in Kg.)
1. Paddy	..	413,746	1,279,107	140,255
2. Wheat	..	52,365	61,495	19,893
3. Groundnut	..	156,818	97,439	7,759
4. Maize	..	3,576	1,846	536
5. Ragi	..	7,309	4,339	75
6. Jute and Mesta	..	550	2,928	..
7. Pulses	..	23,974	10,425	2,170
8. Other oil-seeds	..	2,356	352	506
9. Potato	..	29,281	150,137	..

### 58. Crop Rotation

As discussed earlier, the cultivators of the district were raising single crop till the Hirakud canals carried water to their fields. When irrigation was assured and with organised extension work, they began taking to multiple cropping. Introduction of improved agricultural practices and of short duration high yielding varieties has provided opportunities for multiple cropping. Cultivators have begun growing even three crops in irrigated areas.

The following rotations are usually adopted :—

(1) <i>At</i> land	.. Groundnut	.. Potato, Vegetables
	Mung	.. Hy-maize, pumpkin
	Mung	.. C a u l i f l o w e r, pumpkin.
(2) <i>Mal</i> lands	.. Paddy	.. Potato, Summer <i>til</i>
	Paddy	.. Groundnut, Summer Vegetables
	Jute	.. Groundnut, Summer Vegetables
	Early Paddy	.. Wheat
	Jute	.. Mustard
	Jute	.. Chillies
(3) <i>Berna</i> land	.. Early Paddy	.. Wheat
	Paddy	.. Pulses (Field-pea, Mung, Gram).
	Paddy	.. <i>Dalua paddy</i>
(4) <i>Bahal</i> land	.. Paddy	.. Field-pea (under sown).
	Paddy	.. <i>Dalua paddy</i>

### 59. Manures and Fertilizers

The cultivators apply compost, farm-yard manure and oil-cakes. This is a traditional practice. They do not, as a rule, keep their land fallow for the sake of increasing soil fertility. Green manuring is undertaken to a limited extent. Use of farm-yard manure is extensive although quantity applied per unit area has greatly diminished chiefly on account of non-availability and high costs. There is a heavy demand for the compost provided by the few Municipalities in the district mainly from vegetable growers around towns.

With intensification of cropping and modernisation of agriculture, use of chemical fertilisers has greatly increased. The most preferred are Calcium Ammonium Nitrate, Ammonium phosphate, Di-ammonium phosphate, Ammonium sulphate, Urea, Superphosphate, Muriate of Potash.

A unique feature of the fertiliser consumption pattern of the district is that almost an ideal balance is maintained between Nitrogen and Phosphorus.

A statement showing the quantities of chemical fertilisers consumed during 1966-67 to 1969-70 is furnished below:—

Year	Consumption (in tonnes)
1966-67	10,751
1967-68	21,602
1968-69	36,930
1969-70	53,695

## 60. Crop Diseases and Pests

Diseases, pests and vermins like rats and birds cause considerable damage to crops. Damage is also caused by wild animals like boars, deer and elephants. The following diseases and pests are common. They are given separately for each crop :-

Paddy	.. Jassids, Gall fly, Stem borer, Leaf roller, Rice Hispa, Caseworm, Swarming Caterpillar, Blast, leaf-spot, Foot-rot and Stem-rot.
Sugarcane	.. Red rot, Shoot borer, and white ant.
Groundnut	.. Hairy caterpillar and Tikka disease
Wheat	.. Helminthosporium and smut
Potato	.. Early and late Blight

There are several ways to fight the pests and crop diseases. Superstition still plays its role to some extent. If infestation of pests is found in the rural areas, a group of females (seven in number) combine to prepare

cakes, locally called *manda*, of rice paste and the dead bodies of pests are kept inside these cakes. Then they drop these cakes in the river uttering: "You all go away". There is another practice by which a man goes on throwing pop paddy (*Iia*) and ashes in the pest—attacked plots, and simultaneously utters *mantras*. It is believed, this kills the pests. When the cultivator notices an attack of grass hopper, he catches hold of a pest from his field and puts vermilion mark on its forehead, pours wine on its body and puts it under a perforated pot. The cultivators, thereafter, drink and dance around the pot beating a drum called *Madal*. This usually takes place at night. In the following morning, the prey is let off. The underlying belief is that this sort of worship brings satisfaction to the pest and the pests move out of the fields. In order to prevent infestation of caseworm in rice, the water is drained out from the field and *karla* twigs are fixed at different spots. The plants are believed to develop immunity thereby from pest attack.

Now the cultivators prefer scientific remedies to superstitious practices. Several measures for protection of plants are being taken by Government.

### 61. Co-operative Farming

There are 48 farming co-operative societies having 1,014 members and 2,119 acres of land pooled for cultivation. There are three co-operative society circles in the district, namely, Sambalpur, Bargarh and Kuchinda. Sambalpur has only 4 of these societies with 123 members and 876 acres of land, while Bargarh has the remaining 44 societies with 891 members and 1,243 acres of land. Kuchinda has none.

### 62. Research Station

The Agricultural Research Station was set up at Sambalpur in 1954. The aim of starting this station was to evolve suitable cropping pattern for different types of land irrigated by Hirakud canals and to solve the problems confronted by cultivators. The research station:—

- (i) Finds out suitable manurial and cultural practices for major crops of the area,
- (ii) determines and selects the high-yielding varieties of crops,
- (iii) studies the requirement of micronutrients of major crops,
- (iv) surveys the insects, pests and diseases which affect major crops,
- (v) finds out by field investigation the efficacy of newly invented insecticides and fungicides, and suggests suitable control measures.

The staff of this research station consists of one Agricultural Research Officer, 6 Assistant Research Officers, 5 Agricultural Overseers, one Agricultural Sub-Overseer, one Accountant, one Typist-cum-Clerk, 4 Fieldman Demonstrators, 3 Laboratory Attendants, 4 Peons, 3 permanent Labourers and 2 Chowkidars. The Agricultural Research Officer holds charge of the station.

The Orissa University of Agriculture and Technology is also building up a major regional research station at Chiplima.

### 63. Farms

#### (i) Central State Farm (Hirakud), Jharsuguda

The farm was established in 1967 by the Government of India (Ministry of Food and Agriculture) at a cost of Rs. 3.62 crores. It has been proposed to develop this farm by phases in an area of about 10,000 acres (4,050 hectares) in the foreshore and periphery areas of Hirakud reservoir in Jharsuguda Tahsil. The object of setting up this farm is to produce hybrid seeds of maize, wheat, vegetables, etc., in order to meet the increased requirement of seeds during the Fourth Five-Year Plan period (1969—74). The scheme also envisages utilization of the foreshore and periphery lands of Hirakud reservoir for the production of high yielding varieties of seeds and foodgrains for compensating the loss the region has suffered due to submergence of cultivable lands by Hirakud reservoir. It will also serve as a demonstration centre for cultivation of improved and high-yielding varieties of crops. There are 109 persons on the farm staff. When the farm is fully developed, the Director of the farm expects that it can produce 48,652 maunds (18,483 quintals) of hybrid seeds, 153,000 maunds (58,125 quintals) of paddy/wheat and 58,000 maunds (22,034 quintals) of oil-seeds.

#### (ii) Chiplima Farm

Established in 1959, the farm is meant for seed multiplication. The farm is 21 miles (34 Kms.) away from Sambalpur. It is under the charge of a Farm Manager, under whom there are one Agricultural Overseer, two Agricultural Sub-Overseers, four Fieldman Demonstrators and ten permanent Labourers. The farm is under the District Agricultural Officer, Sambalpur. The total area it covers is 201 acres (81.4 hectares). So far, 125.55 acres (50.8 hectares) have been reclaimed for cultivation. The farm is watered mostly by lift irrigation and partly by flow water. The farm has been transferred to the Orissa University of Agriculture to establish a regional research station.

#### (iii) Lamal Farm

This is a seed farm. It was opened in 1957 at Lamal, 12 miles (19 kms.) away from Sambalpur. Its main purpose is to multiply improved strains of seed obtained from outside. Production of planting materials is also undertaken. The farm staff consists of one Agricultural Overseer, two Fieldman Demonstrators and three permanent Labourers.

They work under the administrative control of the District Agricultural Officer, Sambalpur. The farm extends over an area of 61.11 acres (24.74 hectares) of which 12 acres (4.86 hectares) are *At* land, and 11.25 acres (4.55 hectares) *Mal* land, 29.36 acres (11.89 hectares) *Berna* land, and 8.50 acres (3.52 hectares) *Bahal* land. Only 45.29 acres (18.34 hectares) are now under cultivation. It has the advantage of canal irrigation.

**(iv) Gobindpur Farm**

Situated at a distance of about one mile from Bamra railway station, the farm was established during the ex-State Administration of Bamra. This is a fruit nursery and seed farm. The farm staff contains one Agricultural Sub-Overseer, one Mali and one permanent Labourer. They are under the administrative control of the District Agricultural Officer, Kuchinda. The farm area is 16.44 acres (7.65 hectares). Of this, 14.69 acres (5.95 hectares) are covered by *At* land and the rest by *Bahal* land. The orchard consisting of 259 mango trees covers 12.85 acres (5.20 hectares). Grafting is also taken up. The farm is irrigated from the Panchayat tank and surface wells by lift irrigation. The orchard receive water from a well by means of *tenda*.

**(v) Barakot Farm**

It was established by the ex-State Administration of Bamra. The farm is a fruit nursery and is about 20 miles (32 Kms.) from Deogarh. The farm staff comprises one Agricultural Sub-Overseer, two Malis and one permanent Labourer. The administrative control rests with the District Agricultural Officer, Kuchinda. It has an area of 10.20 acres (4.13 hectares). Of this, 9.14 acres (3.70 hectares) are under orchard which consists of mango, orange, mosambique, jack fruits and leechi trees. Most of them are fruit-bearing plants. The farm is watered by lift irrigation from the Kola (Kalla) *nala*.

**(vi) Bargarh Farm**

This is a seed farm. It came into existence in 1944. The farm occupies an area of 30 acres (12.15 hectares). Of this, 26 acres (10.53 hectares) are under cultivation. The entire cultivated area is irrigated. An Agricultural Sub-Overseer manages the farm under the administrative control of the District Agricultural Officer, Bargarh.

**vii) Lachida Farm**

The farm was established in 1957, at a distance of 16 miles (26 Kms.) from Bargarh. It has a total area of 214.33 acres (86.80 hectares). It receives water from canal and lift irrigation. Major crops grown in the farm are groundnut, sugar-cane, kulthi, maize and banana. The Farm Superintendent is in charge of it.

**(viii) Barpali Farm**

Established in 1948, the farm is situated at a distance of 12 miles (19 Kms.) from Bargarh. The total area is 157.63 acres (63.84 hectares). Of this, 16 acres (6.48 hectares) are under agronomical experiments, 4.03 acres (1.63 hectares) under orchard and 97.49 acres (39.47 hectares) under crops. About 54 acres (21.87 hectares) get irrigation. It is under the charge of a Farm Manager. The District Agricultural Officer, Bargarh, is the controlling officer.

**(ix) Burkel Farm**

The farm came into existence in 1957. It is situated in a non-irrigated area of Padampur which is 52 miles (84 Kms.) from Bargarh. The total area of the farm is 47.14 acres (19 hectares). The farm is irrigated by tank and well. A Farm Manager holds charge of the farm and the administrative control rests with the District Agricultural Officer, Bargarh.

**(x) Gambharipali Farm**

This farm started in 1956. It extends over an area of 571.11 acres (231.30 hectares). Banana suckers and improved seeds are produced here. The farm receives irrigation from canals and tanks, and also by means of pump. The farm Superintendent is in charge of the farm and the staff under him consists of about 80 persons.

**(xi) Demonstration Farm, Chakuli**

The farm started in 1967-68. It has an area of 45.09 acres (18.26 hectares). Production of improved seeds is practised here. The farm receives irrigation from canal. The farm staff consists of one Agricultural Sub-Overseer, two Fieldman Demonstrators and three permanent Labourers.

**(xii) School Farm, Parmanpur**

The farm came into being in 1956. The farm covers an area of 67.69 acres (27.41 hectares). Multiplication of improved seeds are done in this farm. It has the advantage of canal and tank irrigation. The farm staff consists of one Agricultural Overseer, two Fieldman Demonstrators, three permanent Labourers and one Peon-cum-Chowkidar.

**(xiii) Sisal Farm, Nildungri-cum-Beldungri**

The Nildungri Sisal Farm situated at a distance of 9 miles (14½ Kms.) from Sambalpur town on Sambalpur-Deogarh Road commands an area of 751 acres (304.15 hectares), and at Beldungri having an area of 730 acres (295.65 hectares), 20 miles (32 Kms.) from Sambalpur.

The farm was established in 1906 by late John Martin Casey, an Irish gentleman. After his death in 1940, it was managed by his daughters. Mr. Casey was a businessman in Assam and used to come to Sambalpur to pay visit to his relatives. As he was fond of game, he used to visit the reserved forests of Sambalpur district. He had a special fascination for agriculture and he selected the patch of land for sisal cultivation. He had gathered the know-how regarding sisal from one of his relatives serving in a Sisal estate in Africa. *Agave Sisalana* was the main crop raised here. Its planting materials were collected by him from East Africa.

The farm was purchased by the Government of Orissa at a cost of Rs. 7 lakhs from Mr. Casey's daughters on the 29th April, 1964 and is being managed by Soil Conservation Department of Orissa.

An Assistant Soil Conservation Officer, being assisted by 2 U. D. Clerks and 2 L. D. Clerks, 2 Choukidars, 2 Peons, 2 Senior Soil Conservation Assistants, 4 Surveyors, 8 Fieldman Demonstrators, 15 Cattle Attendants-*cum*-Ploughman, one Operator-*cum*-Mechanic, one Jeep Driver and one Tractor Operator, has been kept in charge of management of the farm.

At the time of taking over the farm, 700 acres (283.50 hectares) were covered with Sisal plantation. In the following 2 years, 150 acres (60.75 hectares) more have been brought under this plantation and fertilisers have been applied to the plants to increase the length of the leaves.

From commercial point of view double row methods of planting is being followed to accommodate larger number of plants, i.e., 3,500 plants per acre, to give more yield of Sisal fibre and to facilitate harvesting of leaves. By this method, the inter-space between double rows is 7' and space between plant to plant is 3' and plant row to plant row is 1'.

*Calpogonium* and *Bogamedula* have been introduced in the inter-space as leguminous crop to control weed growth and to improve the fertility status of the soil. As the life period of the Sisal plant is 12 years, every year 50 to 60 acres (20.25 to 24.30 hectares) have been covered with Sisal.

Every year about 8 to 10 lakhs of Sisal suckers and 3 to 4 lakhs of Sisal bulbils are collected from Sisal plantation area for sale and for farm use. The bulbils are raised in the nursery over an area of 7 acres (2.83 hectares) and made ready for plantation after attaining the height of 10" to 12" in one year. As the species of *Agave Sisalana* is rare in India, there is much demand for the same. The suckers and bulbils have been supplied to other States for purposes of propagation. The suckers and bulbils are sold at 10 paise and 0.06 paise each respectively.



**Paddy Cultivation**

During the time of private owner, paddy was being cultivated over an area of only 3 to 4 acres (1.21 to 1.62 hectares). Now it has extended to over 20 acres (8.10 hectares). The paddy obtained is supplied to the workers of the farm.

Vegetables are also grown for supply to the workers.

**Orchards**

There is an orange orchard at Nildungri over 1.25 acres (50 hectares) yielding an annual income of about Rs. 2,000. Grafts are also made in the orchard.

**Labourers**

There were 137 permanent labourers at the time Government took over the farm. Most of the permanent labourers have been provided with free quarters of thatched houses in the colony located at Nildungri and Beldungri Sisal Farms.

**Cattle**

The State Government got with the farm 90 heads of cattle including bulls, bullocks, cows and heifers maintained by the private owner for cultivation and transportation work. The services of the bullocks were best utilised in transporting the leaves from Beldungri to Nildungri covering a distance of 11 miles. Paragrass has been cultivated over 1 acre to supply green fodder to the cattle throughout the year.

It has been decided to dispose of all the cattle except 15 pairs of bullocks. Day-to-day work could be managed by the existing tractor and the 15 pairs of bullocks.

Yearwise production of Sisal fibre and ropes at Nildungri and Beldungri are as below.

Year	Fibre (in quintals)	Rope (in quintals)
1964-65	.. 597.21	37.14
1965-66	.. 608.76	13.38
1966-67	.. 700.00 (anticipated)	13.00 (anticipated)

Yearwise expenditure and income of Sisal farm at Nildungri and Beldungri are as below.

Year	Expenditure	Income
	Rs.	Rs.
1964-65	1,57,100	1,61,728
1965-66	2,01,165	3,34,800
1966-67	2,49,800 (Sanctioned)	3,00,000 (anticipated)

**(xiv) Sisal Research Station, Bamra**

The farm was started with a view to conducting agricultural research on various aspects of Sisal culture. It covers an area of 266.13 acres (107.78 hectares). The exact date of its inception is not available but it was transferred to the Indian Central Jute Committee by Orissa Government on the 16th June, 1962. It is now under the administrative control of the Indian Council of Agricultural Research, New Delhi.

The average annual production of Sisal fibre at this research station is about 83 quintals. The produce is marketed in Calcutta. The fibre produced in 1968-69 was sold at Rs. 206 per quintal.

There is no factory for rope making and for fibre extraction. Fibre is extracted by hand decorticators and also by small decorticating machines driven by petrol engines.

The staff consists of 23 members headed by the Junior Research Officer.

**64. State Assistance to Agriculture**

Loans are advanced to cultivators under the Agriculturists Loans Act 1884 and the Land Improvement Loans Act, 1883. The following table shows the amounts of loan advanced under the above two Acts during different years in the district. Besides this, irrigation loans amounting to Rs. 3,750 and Rs. 3,000 were distributed during 1966-67 and 1967-68 respectively in Rairakhol subdivision.

*Agricultural and Land Improvement Loans*

Year		Agricultural Loan	L. I. Loan	Total
		Rs.	Rs.	Rs.
1964-65	..	58,200	1,19,380	1,77,580
1965-66	..	6,37,665	1,63,900	8,01,565
1966-67	..	23,81,100	2,69,780	26,50,880
1967-68	..	4,70,000	1,16,280	5,86,280

**65. Package Programme**

The Package Programme, formally known as the Intensive Agricultural District Programme, was formulated on the basis of recommendations of a team of experts appointed by the Government of India to probe the food problem of the country in 1959. They recommended concentration of resources in physically potential areas with responsive farmers, well-developed co-operative institutions, and rural leadership. The programme consists of farm planning, of individual farmers provision of adequate and timely credit and supplies of fertilisers, seeds,

pesticides etc., irrigation and marketing. The agency through which the scheme was to work was the Community Development Organisation of the concerned State the higher level expertise being provided by the Agriculture Department.

The Programme taken up with these objectives, in collaboration with the Government of India and the Ford Foundation, started operating in Sambalpur district from 1962. The choice of Sambalpur for this programme was chiefly due to the Hirakud Dam Project which has an irrigable area of a little less than 3,00,000 acres. The co-operative institutions, including the District Central Co-operative Bank, had also attained a fair level of development and were further strengthened. The programme covers 29 Community Development Blocks in the district. At the beginning, it was taken up in the following 15 Blocks : Sambalpur-I (Dhankauda), Rengali, Jamunkira, Kuchinda, Jharsuguda, Laikera-I, Laikera-II (Kirmira), Bargarh, Attabira, Bheran (Bheden), Barpali, Gaisilat, Padampur, Paikmal and Jharbandh. In 1964-65, the programme was extended to 8 more Blocks, namely Sohela, Bijepur, Ambabhona, Lakhanpur, Laikera-III (Kolabira), Bhatli, Sambalpur-II (Manesar), and Sambalpur-III (Jujomura). The remaining six Blocks : Gobindpur, Riamal, Naikul, Barakot, Rairakhol and Naktideul were covered under the programme from 1st April, 1970.

Development of individual farm plans for farmers on the basis of a simple package of practices for different crops forms the basis of the programme. Through these plans the programme seeks to emphasise on use of good seeds, scientific cultural practices, use of adequate fertilisers at the right time and in proper quantities, better water use and suitable plant protection measures. This package of practices is drawn up jointly by the team of specialists at the district level in consultation and collaboration with other scientists working at the State and National level as well as the Ford Foundation in India.

The following table gives the progress under Farm Planning under the Programme.

Year	No. of Farm Plans	Extent of coverage under Farm Plans (Acres)
1962-63	.. 23,062	50,970
1963-64	.. 29,280	1,27,607
1964-65	.. 45,958	1,70,993
1965-66	.. 54,349	1,61,474
1966-67	.. 46,213	1,71,208
1967-68	.. 50,171	2,78,867
1968-69	.. 76,492	3,03,232
1969-70	.. 1,10,663	4,53,625

It may be seen from the above table that there has been progressive increase in the number and size per farm plan from year to year. Many farmers who have not come under the farm planning process but are nevertheless following some of the improved techniques and there has been gradual advancement in the technical standard of farming in the district.

### **Farm Credit**

The primary societies were reorganised and strengthened. The loaning procedure was modified for ensuring easy availability of credit. There are 168 Service Societies in the district. More than 40 per cent of the rural population is covered by these societies.

### **Consumption of Fertilisers**

Before the programme came into operation, the annual consumption of fertiliser in the district was a little over one thousand tonnes. But the following statement shows how the position has changed in subsequent years.

Year	Consumption of fertiliser (in tonnes)
1962-63	3,508
1963-64	5,713
1964-65	8,716
1965-66	12,616
1966-67	10,751
1967-68	21,602
1968-69	36,930
1969-70	53,695

During Rabi cropping, larger numbers of farmers are using fertiliser for Dalua Paddy (Summer Paddy). With assured irrigation from the Hirakud canals, the fertiliser consumption in irrigated areas has increased considerably particularly during Rabi season.

### **Soil Testing**

The Soil Testing Laboratory at Sambalpur was remodelled with the assistance of the U. S. A. I. D., Ford Foundation, and the State Government. The Laboratory is now handling nearly 15,000 soil samples per year.

**Plant Protection :**

The Plant Protection organisation in the district has been strengthened with adequate stocks of pesticides and plant protection equipments at district, block and Grama Panchayat headquarters. Before launching of the programme (i. e., in 1961-62), spraying was done to 44,842 acres and seed dressing to 44 tonnes of seeds. The following figures give the work done in various years.

Year	Spraying (in acres)	Seed dressing (in tonnes)
1962-63	118,383	155
1963-64	148,282	1,497
1964-65	83,212	1,196
1965-66	102,113	1,296
1966-67	104,376	1,512
1967-68	132,000	2,167
1968-69	107,325	2,012

**Agricultural Information Service**

The Agricultural Information Service at the district level has been equipped to disseminate technical know-how through different communicating media such as spoken words, written words and other audio-visual aids. The Radio Services of Sambalpur Station of All-India Radio was found to be very effective. Daily news of different aspects are broadcast at 7.30 A. M. (5 minutes), 1.05 P. M. (5 minutes) and 7.30 P. M. (30 minutes). Special talks on various aspects of farming are also broadcast every Tuesday and Friday. There are 300 Radio rural forums besides *charcha mandals* in the district. The leaflets and bulletins are directly mailed to 10,000 individual farmers and village institutions.

**High yielding varieties and multiple cropping**

High Yielding Varieties Programme was initiated in the district in Rabi 1965-66 with few imported varieties of paddy. Subsequently with the rapid change in technology, new high yielding varieties of paddy, wheat, maize, Jowar and Bajra evolved within the country, gained popularity in the district. Introduction of new technology brought in a change in the concept of growing field crops. New problems were faced in the field and solution of these problems needed constant attention. Gradually new varieties of crops, suited to different agro-climatic conditions, were grown. Introduction of short duration high yielding varieties also provided opportunities for growing more than one crop in irrigated and rainfed areas.

The area under high yielding paddy progressively increased from 12,058 acres in 1965-66 to 1,26,599 acres in 1969-70. The area under high yielding wheat and other crops also increased rapidly during the period.

The Hirakud Canal System irrigates about 2.7 lakh acres during kharif and 1.62 lakh acres during Rabi cropping. Though the canal water was flowing since 1957-58, it remained largely unutilised. High Yielding Varieties Programme and water use demonstration helped proper utilisation of water and by 1968-69 almost the entire Rabi irrigation potential was utilised. Farmers have also begun growing three crops in the irrigated area. In the district, as a whole, the double cropped area increased from 87,000 acres in 1961-62 to 2,26,000 acres in 1969-70, the major increases being under relatively intensive crops.

The district faced a severe drought during 1965-66. The drought extended over the entire State of Orissa and was said to be the worst during the century. For Khariff sowings in 1966, following the drought in 1965-66 the IADP Organisation succeeded in procuring, testing and despatching 353,000 mounds (about 131,740 quintals) of paddy seeds to different parts of the State where seed supply position had become critical. It was observed that some of the high yielding varieties of paddy can also withstand partial drought conditions and crops like Bajra and Jowar can be grown successfully in high lands of rainfed areas. Attention is now being focussed on the rainfed areas in growing suitable varieties of different crops, on cropping pattern, cultural practices, etc.

### **Demonstration**

Emphasis is laid on the quality of demonstration on cultivator's field. Initially a large number of small-sized demonstrations were laid to educate the farmers the combined use of production practices on the yield of different crops. After four years of operations, large-sized cropping pattern demonstrations are being conducted.

An analysis of the results of demonstration indicates that due to adoption of Package of Practices the average increase of yield obtained was more than 3.60 quintals/acre or 46.6 per cent over local practices ; and the return per rupee of investment was about a rupee. High Yielding paddy gave an average yield of 18.12 quintals/acre as compared to 11.16 quintals/acre for improved paddy. Besides paddy, demonstrations were also conducted in groundnut, potato, wheat and other crops.

From the crop pattern demonstration, it is seen that with the recommended Package of Practices the net return from H. Y. Paddy and H. Y. Wheat is Rs. 566 and Rs. 540, respectively per acre and a paddy-wheat rotation can be equally profitable, as a double crop pattern, in land suitable for wheat cultivation. A short duration Mung or mustard can be successfully taken up as a catch crop between two crops of paddy.

### **General**

The programme has created an initiative among farmers for intensive cultivation. There has been a spectacular rise in consumption

of fertilisers and in adoption of plant protection measures. The average yield of rice has consistently remained over the State average and even in 1965-66 which was the worst drought year in the district, the yield rate maintained higher than that in the adjoining districts. Besides, there has been a phenomenal increase in the production of Dalua Paddy. In 1961-62, the area under Dalua Paddy was about 29,507 acres and the production was around 10 to 11 mds./acre. By 1965-66, the Dalua Paddy area in the district increased to 78,000 acres and in 1967-68 to 110,000 acres with an estimated total production of about 150,000 tonnes. The average yield of Autumn and Winter paddy, based on results of crop-cutting experiments by Bureau of Statistics, is given below.

Yield of clean rice/quintal per acre.

	1961-62 (Base year)	1964-65	1968-69 (Provisional)
1. Autumn paddy	2.35	3.28	3.65
2. Winter paddy	3.95	5.26	4.50

Further the rise in the acreage and production of vegetables, oil-seeds (especially groundnut) potatoes, etc. also indicate a definite tendency towards a healthier and more balanced economy in rural areas.

## 66. Animal Husbandry

### (i) Condition of Cattle

On this aspect, the Settlement Report of 1926 states: "The cattle of the district are generally poor looking and diminutive in size. The principal cause of this is insufficiency of bulls and the practice of using immature young bulls for service for a short time and then castrating them for plough work. The total number of cows in the district is 114,070, but the number of bulls is only 1,331".

The condition of cattle we find in F. C. King's Sambalpur Gazetteer (1932), which more or less holds good today, is reproduced below: "The cattle of the district are miserably poor and of small size, but fortunately heavy cattle are not required for the plough owing to the light, sandy soil. For draught purposes, larger animals are imported. Breeding bulls intended to improve the breed of draught cattle have, however, recently been supplied by the agricultural department to interested cultivators, and six bulls have newly been brought to the agricultural farm for the same purpose. The poverty of the cattle is mainly due to the carelessness of the people about breeding, and also to the want of nourishing food. For the greater part of the year, the cattle are given no food by their owners, they are turned out each morning, in the charge of the village herdsmen, to pick up what they can, and it is only in the hot weather months that some rice straw is thrown before them when they return at nightfall. During the rainy season and cold weather, they lie without food or water all night. No fodder crop is grown, silage is unknown and after the month of November, the grazing grounds of the open tracts yield the minimum of fodder.

“Buffaloes are largely used for cultivation and frequently also for draught and for pressing oil and sugarcane. They are not bred locally to any great extent, but imported from the northern districts through Bilaspur and Sirguja. Those reared in the district are distinctly inferior in quality. Ponies used to be kept by the well-to-do for riding, but are now scarce, owing to the introduction of bicycles on a large scale. Goats and sheep in small quantities are kept by the lower castes for food only, no use being made of the sheep's wool. Bhukta near Ambabhona is the largest cattle market in the district and after it ranks those of Bargarh and Talpatia”.

**(ii) Fodder Cultivation**

Fodder cultivation is practised in a small scale. Chiefly Guinea grass, Napier grass, Elephant grass, jowar and bazra are cultivated. In some places, the Soil Conservation Department has taken up fodder cultivation.

**(iii) Milk Supply**

There are about 9 Goshalas which to a small extent meet the milk demand. These Goshalas are run by private bodies. The State Government provides subsidy in the form of stud bulls, milch cows and assistance for fodder cultivation. The major portion of milk supply is made by the individual milkmen. The dairy at chiplima also meets a portion of demand in nearby towns. The average milk-yield of a Deshi cow varies from  $\frac{1}{2}$  lb. to  $\frac{1}{4}$  lb. a day.

**(iv) Sheep Breeding**

Sheep are close graziers and can easily be grazed with cattle. They are very docile and due to their flocking instinct they can easily be managed by boys and even by women in the villages. Mutton is in great demand in Orissa due to growing population. The Indian Council of Agricultural Research does not encourage goat-breeding, hence Sheep Development Scheme is being taken up to supply the people with protein food. Sale of progenies by villagers is also lucrative. The climatic conditions of Orissa are not congenial to the woolly breed of sheep. The Indian Council of Agricultural Research have, therefore, advocated the introduction of mutton breeds of sheep in the State. Bannur breed of sheep has been considered ideal for the purpose. The sheep development scheme has been in operation in Sambalpur district since 1964-65.

The Government of India decided to take up sheep development work in Orissa under “crash programme” and Sambalpur district was selected for operation of the scheme. Accordingly, a sheep-breeding farm was established at Chiplima in 1964-65 in the campus of State Live-stock Breeding Farm, which covers an area of about 2,000 acres (810 hectares). The sheep breeding farm started with a foundation stock of 38 ewes and 2 rams of Bannur breed. The total cost was Rs. 8,000. The purpose of the scheme was to supply protein



food and to develop a disease resistant stock suited to local conditions. The farm expanded during 1966-67 involving a cost of Rs. 55,700 and the total number of Bannur breed rose to 331 (312 ewes and 19 rams). Further more, 1,325 sheep of Bannur breed were purchased during 1964-65, 956 during 1965-66, 640 during 1966-67 and 201 during 1967-68. These were purchased for distribution among farmers on exchange basis. The distribution was taken up in 6 Community Development Blocks of Sambalpur district, i. e., Sambalpur I, Sambalpur II, Sambalpur III, Jharsuguda, Attabira, and Rengali. Till the end of 1967-68, 2,296 sheep have been distributed among 209 villagers, and 69 female progenies were received back as part of recoupment. The farm staff comprises one Farm Manager, two veterinary technicians, two veterinary stockmen, two peons, 14 attendants, one chowkidar, one jeep driver and five veterinary technicians for extension work.

#### (V) Pig Breeding and Goat Rearing Farm, Chiplima

The Pig Farm was started in 1965 with a stock of 30 pigs for developing pig breeding and for extending the benefits to tribal people. Two breeds—yorkshire large white and middle white—are maintained here. From 1966 to 1970 (December), it has distributed 129 pigs (66 boars and 63 sows) in Sundargarh and Sambalpur districts. The sale proceeds are as follows :—

1967-68	Rs. 7,983
1968-69	Rs. 2,680
1969-70	Rs. 2,860
1970-71 (up to December)	Rs. 4,625

The goat rearing farm was started in 1965 with a stock of 203 goats. It was set up for producing improved varieties of bucks, for undertaking research to evolve suitable breed for the State, and for distribution of goats to interested persons for breeding purposes. Only 13 goats (3 bucks and 10 does) were distributed in 1967-68 and 12 goats (2 bucks and 10 does) in 1968-69. There are now (1970) 145 goats in the farm.

Both the farms, run by Animal Husbandry Department, are in charge of a Manager. Both are situated in the campus of State Live-stock Breeding Farm, Chiplima.

#### (VI) Special Poultry Unit, Chiplima

The Special Poultry Unit, situated in the State Live-stock Breeding Farm at Chiplima, was started in 1966. The farm took its shape after the Regional Poultry Farm, Sundargarh shifted to Chiplima in 1966. Initially, the Tribal and Rural Welfare Department was giving financial assistance. From 1967-68 this assistance has stopped. Now it is entirely financed and run by the Animal Husbandry Department. The aim of starting this farm was to supply improved breeds to tribal people as a means of encouragement to take up poultry industry and thereby improve their economic condition. The farm also partially caters

to the needs of people in Hirakud, Burla, Chiplima and Sambalpur towns. During 1970 (December), total poultry numbered 1,088, consisting of 98 cocks and 990 hens. White Leg Horn, Rhode Island Red and Australop varieties of birds are reared here. The farm is charge of a Manager.

### 67. Animal Diseases

Common animal diseases are Rinderpest, Haemorrhagic Septicaemia, Foot and Mouth Disease, Black Quarter and Anthrax. The last District Gazetteer (1932) states "The most common disease is rinderpest, which in 1929-30 caused 793 deaths". These diseases make their appearance at any time during the year, but it is more marked during monsoons. The following table shows attacks and deaths from different diseases:

Diseases	1965-66		1966-67		1967-68	
	Attacks	Deaths	Attacks	Deaths	Attacks	Deaths
Rinderpest ..	461	205	372	125	182	83
Haemorrhagic Septicaemia.	573	260	489	155	294	164
Foot and Mouth diseases.	1,119	4	756	18	14,649	93
Black Quarter	155	113	121	97	231	164
Anthrax ...	24	24	..	..	8	3
Other diseases	182	128	566	264	787	134

Mass Vaccination has been undertaken for eradication of rinderpest.

#### Veterinary Hospitals

A Veterinary dispensary was opened at Sambalpur in June 1906, and another at Bargarh in 1909. Before 1950, there were 7 dispensaries in all. At present (1968), the total number of Veterinary dispensaries is 33 including 2 Hospitals at Bargarh and Sambalpur. In addition, there are 86 stockman centres. A full list of these dispensaries and stockman centres is given at the end of this chapter (Statement III).

#### Live-stock

The number of live-stock in 1961 was as follows:—

Cattle	..	955,254
Buffalo	..	85,410
Sheep	..	64,366
Goat	..	208,503
Horse and Pony	..	9,432
Mule	..	4
Donkey	..	25
Camel	..	11
Pig	..	3,619

Total Live-stock	..	1,326,624
Total poultry	..	581,132

## 68. Fisheries

Numerous varieties of fish are available in the district. Names of those fish-varieties have been given in Chapter I (General).

### (i) Fish-rearing

Water area available for fish rearing is about 50,000 acres (20,250 hectares). Usually fish seed is collected either from Fisheries Department or from private seed traders. At the end of 1 or 2 years when fish is demanded by the local people, specially in summer months, the villagers catch fish mostly by cutting the bunds or *hudas*. Very few catch by the netting assistance offered by Fisheries Department.

The main sources of fish supply are the Hirakud Dam Reservoir. Grama Panchayat tanks, Departmental Farms at Barpali and Sambalpur, and the river-stretch below the Hirakud Dam.

### (ii) Implements

The following implements are used to catch fish

- Bamboo traps .. Baza, Bendu, Poluha, Thapa, Thopi or Khainchi, Kumuna, Dhauri of various sizes mainly to catch minor fish, chuna, crabs, prawns and tortoise.
- Nets .. Kadijal with 3'—5' sticks holding nets of different mesh mostly  $\frac{1}{4}$ "— $\frac{1}{2}$ ". These are made of yarn. Nylon gillnets and fishing dragnet of nylon and Madura yarn used by netting parties of the Fisheries Department.
- Rods ... Angling rods and lines for both fixed and wheeled rod and line of different size.

(iii) In 1930, pisciculture was so to say non-existent. The Mahanadi was the sole natural source of fish-supply. In this connection, the Sambalpur District Gazetteer (1932) states—"Fish of many varieties including *mahseer*, *rohu* and *tengra* are found in the Mahanadi and other rivers. The Government has made fishing on the Mahanadi free and, following this example, the zamindars have, as a rule, left fishing free in the rivers in their estates. No attempt, worthy of notice, has been made in the direction of fish culture in tanks or preserved waters". After construction of the Hirakud Dam, pisciculture made a great stride and the district got ample supply of fish from the Hirakud reservoir. The Grama Panchayats also started fish-culture in a number of tanks transferred to them or newly constructed by them. Pisciculture by private persons has also been boosted

## 69. Forestry

The forests in the district extend over an area of about 2,351 square miles split up as below :

Name of Forest Division	Reserved forest (Sq. miles)	Khesra forest (Sq. miles)	Other forest (Sq. miles)	Total forest area (Sq. miles)
1. Bamra ..	332·940	20·000	267·860	620·800
2. Deogarh *	246·090	177·880	..	423·970
3. Rairakhol *	387·267	60·680	..	447·947
4. Sambalpur ..	489·210	14·680	131·540	634·820
5. Padampur (Range)	..	..	223·930	223·930
Total ..	1,455·507	273·240	623·330	2,351·467

The nature of forests is mainly that of northern tropical dry deciduous type, though in some parts in Deogarh moist deciduous species occur.

The forests are of three main types (i) Sal (*Shorea robusta*), which is the principal species, (ii) the dry-mixed forests, and (iii) the bamboo forest.

In the first category of forests, Sal is preponderant covering more than 70 per cent of crops. Sal is found in the deeper, damper and better drained soils. In Deogarh Division, it occurs on hill-slopes in the east and in the central part of the division, in the Pravasuni along eastern bank of river Brahmani, and in Gogwa. Generally, slopes and hill-tops support poor dry type of growth. As one goes up the hill, the quality tends to get poorer until on the top one comes across stunted trees. The soil, having become impoverished due to down-wash by rain and low water-retaining capacity, is responsible for the poor and drier types of forests. In Rairakhol, it occurs throughout the plains and hill-slopes. In Padampur, these forests are confined to Bhoibahal and Jharbandh blocks, and sparingly in Gandhamardan block. These forests also occur in Ushakothi. The usual associates of Sal are Asan or Sahaj (*Terminalia tomentosa*), Dhaura (*Anogeissus latifolia*), Bija (*Pterocarpus marsupium*), Kendu (*Diospyros melanoxylon*), Piar or Char (*Buchanania latifolia*), Senha (*Lagerstroemia parviflora*), Gambhar (*Gmelina arborea*), Jamun (*Eugenia jambolana*), Halland or Kurum (*Adina cordifolia*), Sisoo or rosewood (*Dalbergia latifolia*) and mango (*Mangifera indica*).

\* These Forest Divisions have also areas outlying the district. Forest areas lying only in Sambalpur district are given in the Statement.

In mixed forests, Sal is usually less than 70 per cent of the crops. These forests are composed of semi xerophytes, many of which are deciduous, although some, such as Karla (*Cleistanthus collinus*), come into full foliage in the beginning of hot weather. This type of forest is most conspicuous where the soil, being too dry and shallow for Sal, contains quartz or quartzite which prevents the influx of bamboos. Dry mixed forests cover a small area. The common species found in this type of forests are Karla (*Cleistanthus collinus*), Anla (*Emblca officinalis*), Kendu (*Diospyros melanoxylon*), Char (*Buchanania latifolia*), Senha (*Largerstroemia parviflora*), Bija (*Pterocarpus marsupium*), Mahul (*Mudhuca latifolia*), Salia (*Beswellia serrata*), Kuren (*Helarrhena anti-dysenterica*), Dhaura (*Anogeissus latifolia*), Gambhar (*Gmelina arborea*), Sahaj (*Terminalia tomentosa*), Sisoo (*Delbergia latifolia*), and Simul (*Bombax malabaricum*). Bamboos also occur intermingled with these species.

Bamboos (*Dendrocalamus strictus*), that is Saliabans, are quite common and may be said to be everywhere except on soils where there is quartzite or micaceous and hornblendæ schists. Bamboos seldom grow pure. They overlap the first two categories of forests. They grow with Sal forests. They grow with mixed forests. Pure bamboos only occur over large areas in Kansar forest block. Bamboos are found over large areas in Hatidhara, Kholgarh, Sagmaia, Bindhyabasini, Pravasuni, Gogwa and Kansar forest blocks. Kantabans (*Bambousa arundinacea*) and Molinbans (*Cephalostachyum pergracile*) are found in small areas.

### Economic Importance

Forests occupy an important place in the economy. They influence agriculture. A perennial vegetative cover is maintained by forests which checks soil erosion, prevents greater run-off of water, and helps in raising the water level. They yield a variety of products and earn a good revenue. The following statement shows the revenue earned from forests during 1967-68 and 1968-69.

Name of Forest Division	1967-68	1968-69
	Rs.	Rs.
1. Bamra	16,04,051	23,92,815
2. Deogarh	10,75,607	20,24,726
3. Rairakhol	42,45,381	51,63,394
4. Sambalpur	28,70,423	38,80,733
5. Padampur (Range)	8,16,778	12,31,957
Total	1,06,12,240	1,46,93,625

The principal forest produce are timber, firewood, bamboo and Kendu leaf. Availability of raw materials from forests made it possible for the installation of forest-based industries. The Orient Paper Mills at Brajarajnagar owes its existence to the forests of Sambalpur from where it gets bamboos in abundance. The basket-makers (Betras) live on bamboo works. So their requirement of bamboo is considerable. Bamboos are held in great demand, for the wattling of house-walls and roofs, for making screens, baskets, and mats, and for fencing gardens and cane fields. Of 22\* Saw Mills in the district, 13 are operating at Sambalpur town alone, 6 are at Bamra and 3 at Jharsuguda where chiefly Sal logs are sawn, and exported to industrial towns in Bihar, Bengal, and Madhya Pradesh. A considerable quantity of timber is also supplied to the Railways.

The district is notable for trade in Kendu leaf. A substantial revenue is earned from this source. About 53 per cent of the total forest revenue is yielded by Kendu leaf alone. A revenue of Rs. 77,75,884 was earned during 1968-69 against Rs. 41,77,433 earned during 1967-68 from Kendu leaves. A major part of the produce is exported. Bidi-making industry, based on this forest produce, is a flourishing cottage industry. Bidi-making factories concentrate at Sambalpur, and Jharsuguda. There are 11 such factories at Sambalpur, 11 at Jharsuguda and, 2 at Bargarh\*.

The forest-based industries and forest exploitation works provide employment to a large number of people. Other benefits the local people derive from forests are that they get timber, firewood, bamboo, and other forest produce free or at concessional rate for domestic consumption.

The principal minor forest produce are gum, Mahua flower, chiranji, myrobalan, sabai-grass, and wax.

### **System of Management**

All the Forest Divisions have working plans of their own according to the prescriptions of which the reserved forests are managed. The main system is the sale to contractors of all or selected forest produce in 'Coupes' or demarcated areas of reserved forest laid down in a carefully worked out scheme or working plan. The coupes are sold outright by auction to the highest bidding contractors and are worked over a number of years called 'rotation'. The coupes are again divided into various types of fellings by which trees are removed or cleared by scientific selection and investigation.

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\* Register of Small-Scale Industries (1961)

The Orissa Forest Corporation have also entered into the field of business in forest produce. All the coupes of Belpahar Range in Sambalpur Forest Division and of Badarama Range in Bamra Forest Division have been leased out to this body. In addition, the following coupes have also been leased out to them.

Name of coupes	Name of Range	Name of Forest Division
1. Pravasuni Selection Coupe	Kuchinda	Bamra
2. Brahmani Selection Coupe	Charmal	Rairakhol
3. Terbeda Selection Coupe	Rampur	Rairakhol
4. Balikiari Selection Coupe	Girishchandrapur	Rairakhol
5. Mundher Coppice Coupe	Sambalpur	Sambalpur
6. Hatibari U. W. C. Coupe	Sambalpur	Sambalpur
7. Ghichamura	Rengali	Sambalpur

All the bamboo coupes in Bamra Forest Division have been leased out to Orient Paper Mills for exploitation on long-term basis.

The exploitation of Kendu leaves is regulated under the "Orissa Kendu Leaves (Control of Trade) Act, 1961".

### Rights and Concessions

No rights are allowed in reserved forests. However, grazing is allowed, except in some specific areas of these forests, on payment of fee.

In demarcated and undemarcated forests grazing is allowed. Besides, the Nistar-cess paying tenants are allowed to remove unprohibited species from these forests free of royalty for meeting their *bona fide* personal requirements. For removing prohibited species, they are required to pay royalty at concessional rates. *Bona fide* personal requirements include : (i) timber for house-building, (ii) timber for making agricultural implements, (iii) bamboo for house-building and fencing and (iv) all kinds of grass.

All varieties of edible fruits and roots, flower, leaves, grass, shrubs, and medicinal herbs are allowed free of payment for domestic consumption.

## History of Management

The areas now covered by the present forest divisions of Deogarh and Bamra, and Rairakhol were under the ex-States Bamra and Rairakhol. The old Sambalpur district was having for sometime two forest divisions namely, Sambalpur and Barapahar (now abolished). In the following, brief history of forest management as was prevailing in old Sambalpur district and in these areas is attempted separately.

(i) In Sambalpur, forest conservation appears to have been neglected during early years of British administration. In 1866, the Settlement proposed to demarcate and conserve waste lands to which no private person or village community might lay claim. This was done during the settlement operations between 1872 and 1876. In doing so the requirements of local people were also taken into account. In fact, operation of excluding waste lands was confined to hill and jungle tracts which were in nobody's actual possession. These tracts were demarcated separately from village areas and were declared to be the property of Government. The forests were notified as "reserved forest" under the Forest Act in 1878. In selecting these forests, many waste land forests were allowed to form part of Gaontiaji villages, and the large forests in zamindaries were not affected. Until 1887, when a Forest Officer was appointed, the reserved forests were being managed by revenue officers and the inhabitants were allowed to cut and collect in them and to graze their cattle on payment of a fee (known as commutation fee) of 4 annas (now 25 paise) on each plough or roof. The appointment of Forest Officer led to the formation of Sambalpur Forest Division, and the introduction of the forest stamp system from 1888 which was a feature of forest management in Central Provinces (now Madhya Pradesh). This replaced the commutation system. According to this new system, respectable inhabitants of conveniently situated villages were appointed forest licence vendors. They supplied applicants with licence to cut and remove such produce as the latter might require on payment at rates specified in an authorised schedule of prices. On each licence they placed forest stamps, purchased from Treasury, of the value of produce covered by the licence. Their remuneration consisted of a commission at  $6\frac{1}{4}$  per cent of the amount spent by them on purchasing the stamps. This system was later continued in a modified form. Sale to contractors of all or selected forest produce in coupes was mainly done. Fixed value permit system was introduced in 1920 instead of forest stamp system. According to this system, licence vendors had to buy these permits from Divisional Forest Officer. Villagers could buy these permits which authorised them to remove the forest produce. These permits were used only for a limited number of forest-produce, such as, bamboos, dry wood for firewood, grass, thorns or grazing. Green timber was not sold under these permits, but only in regulated coupes sold to contractors.



No attempt was made to introduce located fellings or regulated grazing till 1898 when the working plan for Barapahar and neighbouring forests was sanctioned. In 1905 it was sought to introduce a better regulation of fellings of all descriptions. But the efforts were greatly hindered by the fact that large number of inhabitants could still obtain all the forest produce they needed from village lands or Zamindari forests, or that they lived at such distance from the reserves that they could not readily make use of the reserved forests. In 1910, the working plan was revised and owing to disappearance of Zamindari and village forests and the consequent greater demand from the reserve forests, coppice fellings were introduced, while the selection fellings in the forests set apart for export continued. In 1921 the plan was again revised and the increased demand for both fuel and poles for local consumption and for export enabled the new plan to be much more detailed. The forest revenue had risen from Rs. 53,111 in 1905 to Rs. 96,109 in 1920. As the revenue increased, the forest division was divided into two from 1928, namely, Barapahar and Sambalpur. The revised working plan (1931—51) for Sambalpur Division was prepared in 1931. The working plan for Barapahar Division was revised in 1942 for a period of 20 years.

There were also Zamindari forests covering 202 square miles which were being managed by Zamindars under Sambalpur Zamindari and Malguzari Forest Rules, 1930. The village forests were the protected forests under the Indian Forest Act, 1878. The Zamindari forests have now been taken over by Government. The Barapahar Forest Division was abolished in 1959 and amalgamated in Sambalpur Forest Division.

(ii) In the ex-State of Rairakhol, the forests were first exploited for sleepers when rail lines were laid in Sambalpur in 1893. But no regular lease was given till 1907, when M/s. B. Barua and Co. were given the first sleeper lease. The lease was subsequently transferred to M/s. Bengal Timber Trading Co. The lease continued till 1927. In the same year demarcation was completed in six forest blocks, namely, Landakot, Kholgarh, Hatidhara, Landimal, Rail, and Rahen. The first regular working plan (1942-60) was prepared by Dr. H. F. Mooney.

(iii) In the ex-State of Bamra, about 1880 there was timber trade with Jenapur in Cuttack district. The timber was being floated down the river Brahmani. Sleeper operations started in 1888. Sir Basudeb Sudhal Deb, who was then the Raja, did not give contracts to individuals or companies, but did the business himself with the Railways under the name "Rajkumar Sleeper Business". In 1906 a Ranger was first appointed to hold charge of the Forest Department. During the rule of Raja Satchidananda Tribhuvan Deb, the people were required to pay royalty

for the use of reserved trees for house building. From 1920, the ruling chief paid attention to forest improvements and framed forest rules. The State forest rules were published in 1924. The first working plan (1933—43) was prepared in 1933 by G. N. Mathur.

## 70. Natural Calamities

### Former immunity from famine

Until the year 1900 Sambalpur was regarded as practically immune from famine, so much so that it was described in official reports as a "Garden of Eden" and a "Land of Promise". But in spite of former plenty, failure of crops is known to have occurred from time to time involving some distress and scarcity, at least in parts of the district. Early records show that there was such a failure in 1834, when in spite of the prohibition of export, the price of rice rose as high as 8 to 10 seers (7.46 to 9.33 kg.) per rupee. There was again scarcity in 1845, but after the latter year the price of rice remained steady at 54 seers (50.38 kg.) per rupee. Subsequently, owing to unfavourable and deficient rainfall, it rose to the then abnormal figure of 16 seers (14.93 kg.) per rupee both in 1865-66, the year of the great Orissa famine called "Na-Anka" and in 1877-78., when some scarcity followed a meagre harvest. In 1886, there was again a failure of the rice crop in some parts, prices rising to 19 seers (17.72 kg.) to the rupee, and relief works were opened, but failed to attract labour. Through all these years, however, there was no general famine, though there must have been severe distress in the more remote and mere jungly, less closely cultivated and less densely populated parts of the district.

### Famine of 1897

Even in 1897, when other parts of the country suffered from one of the worst famines of the 19th Century, Sambalpur was scarcely affected. The outturn of the rice crop was fair, being 70 per cent of an average crop, and good prices were obtained. Famine was declared only in a small area of 228 square miles with a population of 63,000 comprised in the Chandarpur and Malkharoda Zamindaris, which were later transferred to the then Central Provinces. In this area famine relief measures had to be undertaken and in Borasambar, where there had been a partial failure of the crops owing to the premature cessation of the monsoon some relief work on roads was started by the estate. Elsewhere it was found sufficient to provide some work on tanks with the help of loans and private subscriptions. How little the district was affected by this famine may be realised from Mr. Craddock's report on the Famine in the Central Provinces in 1896 and 1897. "In Sambalpur, with a very fair rice crop, large exports and high prices, money poured into the district, and private charity amply sufficed to support the poor whom the high prices affected. A single road work

was opened in April and continued till October, but this was chiefly intended to meet the needs of a corner of the district where the local crops had been poor and immigrants from Bilaspur were numerous. The numbers on this work only reached 2, 200, and rapidly fell as the rains advanced". A further proof of the lightness of the famine is afforded by the fact that "a great many people from Bilaspur wandered over into Sambalpur, the land of plenty".

### Famine of 1900

The first real famine, and hitherto the only famine of Sambalpur was that of 1900<sup>1</sup> which showed in a striking manner the dependence of the people on the rice crop and the danger of a premature cessation of the monsoon. In Borasambar alone is there any considerable area under millets, and though the pulses called mung and kulthi are grown all over the district, the area given up to them is comparatively insignificant. There is practically no *rabi* crop, and everything consequently depends on the rice. This failed in 1899-1900 owing to a badly distributed rainfall, and the district was involved in famine in spite of previous years of plenty. The outturn of the rice crop in 1895-96, i. e., of the crop harvested at the end of 1895, had been 70 per cent, and in the preceding three years it had been 88 per cent. In 1896-97 there was bumper crop, the average outturn being 120 per cent, but for other food-grains, viz., pulses, *til* and sugarcane, the outturn was 45, 45 and 60 per cent respectively. In 1897-98 the harvest was almost as good, the outturn of rice being 101 per cent, while there were full crops of *til*, etc., and the other crops were also good. Preceding circumstances could not have been more fortunate, except perhaps in the Borasambar Zamindari where, however, the outturn was little short of a full crop.

On the whole, the rainfall of 1898 was sufficient, seasonable and favourable to agriculture, and the earlier part of the monsoon of 1899 was well up to strength. The rains broke on the third of June 1899 and continued with fair steadiness till the middle of August, the total rainfall up to the 19th August being 38.72 inches at Sambalpur and 30.93 inches at Bargarh. After this, the monsoon current fell off in strength, yielding only light and unsatisfactory showers. But up to the end of the month, there was no apprehension of famine, for some of the crop on the light *at* land had been reaped, and the prospects for the heavier lands were good. Indeed, it was reported at this time that there was no reason to suppose that any relief would be necessary. From the beginning of September, however, it became evident that unless there was heavy rain, the crops would suffer, and distress ensue. The

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1. This account of the famine of 1900 has been compiled from the Deputy Commissioner's Final Famine Report. (Vide Sambalpur District Gazetteer, 1932, by F. C. King—P. 144).

gloomy anticipations were realised. In the first half of September there was a fall of 1.23 inches at Sambalpur and of 1.91 inches at Bargarh and then the rain ceased altogether, giving a total of 45.51 inches in Sambalpur and 37.78 inches in Bargarh. This was not very much below the average for the Sambalpur *tahsil*, which consequently suffered least. In fact, had the earlier rain been more evenly distributed the loss of crops would have been slight, and as it was, tanks were filled early, and there they existed, they saved the crops on the heavy lands in October. The villages in the east and north of the Bargarh plain also were not so seriously affected, getting, as in the Sambalpur *tahsil*, half an average crop, but distress was very severe in the south-west, especially in Borasambar. In the district, as a whole there was a serious failure of the rice crop, the outturn of which was only 30 per cent for transplanted and 45 per cent for broadcast rice, while in Bijepur and Borasambar it was almost an entire failure.

On the 22nd September the first step towards the organization of relief was taken, *Patwaris* throughout the district being ordered to get village relief lists in readiness. It was not anticipated, however, that there would be a complete failure of crops in any tract and it was therefore assumed that the labour required for the harvest would tide the labouring classes over October and November, so that actual relief operations would not begin until the month of December. This forecast proved to be practically correct, as will be apparent from the following table showing the progress of relief measures throughout the year. Briefly, there were five fairly distinct periods.

- (1) November and December, when distress was being tested.
- (2) The general extension of relief with works and kitchens, which lasted till March, when cholera caused much disorganisation, and when there was also a lightening of distress owing to the incoming of the *mahua* harvest.
- (3) The hot weather period, when by means of small village works and extended kitchens, relief was effectively organised in the face of cholera.
- (4) The fourth period showed a contraction of relief on works and a great extension of kitchen relief.
- (5) The fifth was the period of contraction lasting from the middle of August till the end of October, when the district was practically in the same position as in December, 1899.

Month	No. of kitch- ens open	No. of relief in kitch- ens	No. of works open	No. relieved in works	Total No. relie- ved includ- ing village relief	Percentage of popu- lation of famine tracts on relief	Popu- lation
1	2	3	4	5	6	7	8
November, 1899	7	500	3	1,000	1,500	0.4	350,000
December, 1899	44	13,000	5	2,000	15,000	4.3	
January, 1900 ..	73	20,000	10	7,500	27,500	7.8	
February, 1900	82	20,000	10	9,000	29,000	8.3	
March, 1900 ..	85	14,500	21	7,000	22,000	6.3	
April, 1900 ..	96	17,000	32	15,000	34,000	8.7	390,000
May, 1900 ..	102	19,000	32	18,000	39,000	10.0	
June, 1900 ..	133	34,000	18	13,000	49,000	12.5	
July, 1900 ..	163	61,000	8	13,000	77,000	19.7	
August, 1900 ..	231	84,000	4	5,500	93,000	21.6	430,000
September, 1900	156	33,000	..	..	36,000	8.4	
October, 1900 ..	73	14,000	..	..	15,000	4.3	550,000
Average ..	104	27,500	12	7,500	36,500	9.7	380,000

### Stocks

As stated above, the district was scarcely affected by the famine of 1896-97, but in that year and in the preceding year, owing to the scarcity in other districts and consequent high prices, all the available balance of grain stocks was exported, and the year 1897-98 was started with a much lower reserve than usual. But the crops of that year and of 1898-99 were excellent, and it is estimated that in September, 1899 there was more than sufficient for a year's supply. In Borasambar, however, the food stocks in the hands of *gaontias* and *raiya*s were very small after the beginning of 1900. Little grain was sold at the local markets, and in some tracts the labourers and smaller tenants depended upon supplies brought in by *Cutchi Mahajans*. In Bijepur the majority

of the *gaontias* and many tenants had good stocks, but, being surrounded by a large population of Gandas, they were in constant terror of being robbed, and hid their stocks carefully. It was not till the end of August, when crop prospects were assured, that they brought them out for sale. In the rest of the district, stocks in the hands of cultivators were probably adequate, and those in the hands of the richer men were large.

### Prices

Regarding the course of prices, the Deputy Commissioner wrote as follows in his final report on the famine : "Sambalpur has been accustomed to have its staple food very cheap. The normal rate of rice in Sambalpur is about 17 seers (15·87 Kg.), but at Bargarh it is 20 seers (18·66 Kg.), falling at harvest time so low as 22 and 24 seers (20·52 and 22·39 Kg.) and in other less central parts of the district the prices are of course still lower. Small broken rice, cleaned off from the finer qualities, is to be had at 30 seers (28 Kg.), and it is on this that many of the lowest class habitually live. It is then the less surprising that distress should have been acute in a formerly prosperous district, which even yet had large grain stocks locked up in the hands of its well-to-do residents, when prices ranged in out of the way tracts from the normal 24 seers (22·39 Kg.) to 6 seers (5·60 Kg.) and even to 5 seers (4·66 Kg.) per rupee. In contrast with the ordinary usage the more remote parts, where rice is usually cheapest, had the highest prices. They were farther from the stocks. Locally, *gaontias* and *raiya*s who possessed stocks would not sell. Many could have parted with half their hoard quite safely and at a very high price. That they did not do so is due to two facts. They were afraid, by open selling, of drawing attention to the fact that they possessed stocks which could be looted. And again, so panic-stricken were the people by the failure of the 1899 crops, a disaster for which they had no precedent that they kept in store all that they could in view of a second possible failure. So strong was the belief that the crop of 1900 would also be a failure, that it was in some tracts difficult to get tenants to take *taccavi* loans for seed grain. They said that it would be lost and themselves burdened with the debt.

"Borasambar was the most remote tract and therefore in an ordinary year, the place of cheapest rice. This year (1900) in January, when in Sambalpur and Bargarh the price was 11 seers (10·26 Kg.), it was 9½ seers (8·86 Kg.), in Borasambar. By the end of February prices had risen there to 8½ seers (7·93 Kg.), when in other parts they were 10 and 11 seers (9·33 Kg. and 10·26 Kg.). By June when 10 seers (9·33 Kg.) was ruling in Sambalpur, and 9½ seers (8·86 Kg.) at Bargarh, the Borasambar price rose to 7½ (7 Kg.), and again to 6½ seers (6 Kg.), which rate ruled steadily throughout July and August. From January to August, 1900 the average prices were

9 seers (8.40 Kg.) in Sambalpur town, Bargarh and Bijepur, and 7½ seers in Borasambar. There was in all parts a gradual rise up to the month of August, and prices seem to have risen much higher than in either Raipur or Bilaspur, where 9 seers was considered a high rate.

“It was not until the end of August that the tension was relieved. By that time it was clear that the chances were in favour of a good harvest. Prices fell at headquarters from 8¾ to 11½ seers (8.16 to 10.73 Kg.) and at Bargarh from 8½ to 9½ seers (7.93 to 8.86 Kg.). In Borasambar, owing to the harvesting of an early millet, prices fell at the same date from 6 to 8 seers. After that there was some hesitation at Sambalpur itself, but in the district the fall was steady. At Bargarh prices went from 9½ to 11 seers (8.86 Kg. to 10.26 Kg.), from 11 to 13 seers (10.26 Kg. to 12.13 Kg.). By the middle of October when harvesting had generally well begun, prices fell nearly to the normal, which, by the end of October they attained.

“The course of prices seriously affected at sowing time even such cultivators as were not in need of relief. Ordinarily, about Bargarh, *dhan* seed grain sells at 2 *Khandis* (40 *tambis* or 50 seers) per rupee. This year in Borasambar and Bijepur its price was 15 *tambis* (about 18 seers). Large numbers of tenants, getting their *taccavi* early, went into the Bargarh Khalsa and bought their seed grain there. Nothing could better prove the depletion of food stocks in Borasambar. By December a harvest had been got in which probably represented at least 3,000,000 maunds (1,119,600 quintals) of rice, but in the famine tracts the crop was little more than sufficient to furnish seed grain for the next sowing. The stocks which did exist, however, were held back both by *gaontias*, *rai-yats* and dealers, by the former two classes in view of what they considered a probably second failure of crops, and by the latter, partly for the same reason, and partly to be sure of getting the highest possible price for their grain.”

### Relief works

Relief on works was mainly afforded not in the camps of the Public Works Department, which were never largely attended, by works of considerable size managed by civil agency on the intermediate system, and by small village works managed by piece-work through the agency of *gaontias*. This policy was rendered the more necessary by the continual presence of cholera for four months, but in any case it was found to be difficult or impossible to tempt the people, especially the aborigines of Borasambar, to any distance from their homes in order to obtain relief on large works. They were not educated in famine operations, and people in need of relief and capable of working were most reluctant to come to the works. Gradually they gained confidence, but

in most March and April the extension of relief works was rendered most difficult by continual outbreaks of cholera and wholesale stampedes. These panics were frequently repeated throughout the year, though on a smaller scale and for much less cause. The result was that the aboriginals greatly preferred labour on *malguzari* works near their homes, although they got much lower wages and did much more work—double the work, indeed, for these wages. But they were more familiar with the small tank-works run on their accustomed system of piece-work. In Bijepur again, the Gandas, who were most in need of relief, either thieved rather than take to honest work, or proceeded to qualify themselves for kitchen relief by remaining idle and in want of food until they were emaciated. Even when they came to the works, their outturn was conspicuously low and their manifold complaints conspicuously loud. The total number of units relieved by civil agency and *malguzari* works was 1,899,657 and by Public Works Department works 601,485.

### Kitchens

A reference to the previous table will show the rate at which kitchens were opened. The food given was cooked rice and *dal*, according to the prescribed scale of rations, but some deviations from rule were found to be necessary. The people on relief were accustomed to the plainest possible fare, and though even the moderate allowance of *dal* that was served out was a luxury to them, it was not fully appreciated at first. They would not eat *kedgerree* (Khichri) or rice and *dal* cooked together, for it was to them an unaccustomed dish. From the start, rice *bhat* had to be cooked separately, and this they at first, reserving the *dal* pottage as a tit-bit to be sucked up slowly afterwards. Even plain *bhat* was objected to in the hot weather, because the people were accustomed to a dish called *Pakhal* i. e., rice which has been parboiled and then steeped in a large quantity of cold water. So in the hot weather a half ration of *bhat* with the allowance of *dal* was served hot in the early morning, and in the evening the remaining half ration was given cold in the form of *Pakhal*.

There was a great deal of difficulty at first in inducing people especially aboriginals, to accept cooked food. They were afraid to take help which, they imagined, would have to be paid for later in some way, and they were afraid of losing caste. This objection was gradually overcome. Care was taken to appoint as cooks only Brahmins of the highest of the three Oriya classes, and as waterman only Gours. This met most objections, but the Binjhals at first insisted that they could not eat from the hands of any Brahman. They were then given a cook of their own caste, but later this was admitted to be unnecessary. The highest attendance at kitchens was 84,000 on the 18th August. Altogether 9,780,291 units were relieved at a cost of Rs. 4,00,923-6-2 in food alone.



## Mortality

The mortality during the famine was exceptionally high, 74,170 deaths being recorded from the 1st October 1899 to the 30th September 1900, i.e., a death-rate of 93 per mille per annum on the last census population of 796,000. But there is some doubt about the figures, for the weekly returns showed only 62,924 deaths, i. e., a death-rate of 79 per mille. A severe epidemic of cholera and smallpox accounted for 10,810 and 1,398 deaths respectively, and excluding the latter the rate is either 70·7 or 63·7 per mille. Even this, however, is unduly high, and the causes of the apparent divergence from a normal death-rate appear to be as follows: Firstly, the census figure of 796,000, as taken in 1891, did not represent the population of the district at the time of the famine, for there was a large increase due to immigration, which was greatest in the zamindaris constituting the famine tracts. The second cause lay in the migration of wanderers, among whom mortality was very high. They had come long distances and were almost always in a most reduced state, some being mere skeletons. They had no houses to go to, little or no shelter was available, and they were exposed to unusually wet and chilly weather. The third cause may be found in the unusual unhealthiness of climatic conditions. The rainfall was a record one, and it came in bursts, so that the weather alternated between extreme heat and considerable cold. A form of recurrent fever consequently broke out in what was practically epidemic form, accounting for 19,976 deaths out of the total of 74,107, i. e., 27 per cent. It was no respecter of persons, all officials suffered from it, and this seriously hampered relief work in August and September.

## Attitude of the People

It was difficult, in the face of long previous prosperity, to believe that distress in Sambalpur would be real. It was real, and the explanation is that the appearance of prosperity is somewhat deceptive, for it is confined to cert in rich parts of the district and to the higher classes. The standard of comfort moreover is low, a large proportion of the population consisting of aboriginals, and aboriginals do not save. Distress was consequently acute, and one striking illustration of its reality is that the merchants bought up at low prices thousands of brass *lotas* and *ginas*, two cart-loads of which were at one time being ferried over the *Mahanadi* to Sambalpur daily. Another illustration will be found in the figures of export and import, for Sambalpur exported foolishly, and had to re-import inferior rice in equal quantities later in the year.

When famine did come, the former immunity was a hindrance to relief, the cheapness and profusion of former years having unfitted the people to contend with scarcity. On the one hand, the village officials and those that were too well-to-do to be seriously affected gave no help

to relief operations, indeed, a stubborn opposition was frequently raised by those who ought to have helped, and who probably would have helped if they had previous experience of famine. On the other hand, the poorer classes who needed relief were uneducated in famine programmes, and had to be encouraged and instructed before they were able or willing to accept the relief open to them. This was especially the case in Bijepur and Borasambar. In the former charge the lower classes consist largely of Gandas, and the Ganda is by nature and habit a thief, and, failing that, a beggar. They were willing enough to avail themselves of the kitchens both for themselves and for their children, but they would not, if it could be avoided, attend a relief work. Their prejudices are against work, and when turned out of kitchens as able-bodied, they took to thieving.

In Borasambar, the majority of the people were aboriginals, Binjhals, Gonds and Khonds, and the difficulty of dealing effectively with them may be gathered from the previous account. In spite of the discomfort of the rains, the heavy tasks and rigorous fines, large numbers preferred relief on works to the alternative of gratuitous relief of any kind, and, in particular, of kitchen relief. The Binjhals were especially reluctant to come to the kitchens at the beginning of relief operations, chiefly because they were convinced that they would either be deported to Assam or somehow made to pay for the relief later by services being exacted from them.

In the case of village *Chaukidars*, the giving of village relief was understood, for they were Government servants. But with the rest of the people there was always an uncomfortable impression, which could not be eradicated, that the acceptance of money-doles would pledge them to some kind of future service. Generally speaking, the attitude of the people towards relief measures was one of the extreme shyness, except among the Bijepur Gandas, who were shy of work only.

### General Conditions

In conclusion, the following remarks of the Settlement Officer, Mr. F. Dewar, may be quoted as showing the economic revolution due to the introduction of the railway and the way in which it affected the people during this famine. After explaining that formerly the district was a land-locked home of cheapness, and that rice stayed in the district because it could not get out, he writes \*—“Circumstances were altered by the completion of the main Bengal-Nagpur Railway line in 1890 and of the branch line to Sambalpur in 1894. The price of rice at once began to rise towards its level in outside districts. For many years the opening of the country brought with it nothing but progress and increased prosperity. There were fair or good harvests, the small cultivator stored grain or sold it at high rates, the labourer found work and

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\* Sambalpur District Gazetteer (1932) by F. C. King.

was paid in grain. The large land-owners and tenants made big profits and were able to build tanks, extend their cultivation, and still save.

But it was another matter when in 1899 the rice crop failed over all the western and south-western parts of the district. The smaller cultivators had lost all their crop even in villages where the richer men, using the irrigation tanks, saved half a harvest. The small cultivator soon had to buy. The farm hand thrown out of employment, the day-labourer and the artisan, had to buy. But a price of 16 seers, (14.92 Kgs.) formerly considered a scarcity price, had now become the normal rate, and when that rose to 12 or 10 seers, (11.20 or 9.33 Kgs.) famine conditions were well established. Meanwhile, the richer men, attracted by the previously unequalled price, had sold for export much too early, and most of the surplus grain had left the district. Later, even in the stricken tracts, there were still large stocks, their first mistake and remembering also that in the past bad seasons had run in pairs, held back and lost their second opportunity.

“The climax was reached in August 1900, when no faith could be put in the coming harvest, because weather conditions seemed to threaten a second failure. Matters were at their worst in the remote western zamindaris. Here, only fifteen years before, a normal price after an ordinary harvest had been 70 to 80 seers (65.31 to 74.64 Kgs.). It went to 6 seers in August 1900. Rice had been rushed out on the railway in October, November, December and January. Ten for then an exactly equal amount had from April to August to be railed and carted back, inferior grain at a double price. The financial loss fell upon the labouring classes, on the small cultivators, who were chiefly aboriginals, and on Government. The rich cultivators missed most of the profit which they might have made had they understood the new conditions that the railway had brought with it. The only gainers were a dozen traders, the railway company, and the agents who exported labour to Assam.

“One most note-worthy feature of famine work in the latter months was the difficulty of redistributing grain throughout the district to tracts where local supplies were exhausted or were being held back. To drain the rice out of the district had been easy. It had been brought to trading centres in headloads over village paths. It could not be redistributed in the same way, partly because private trade was paralysed, and partly because the people who carried it were, when it came back, in famine-kitchens or on works. Even had they been available, they could not have bought it, and they could no longer have been trusted as hired carriers. It had to be carted over a district which had but few cart roads. After the rains broke in June, even the main road to Raipur was frequently

blocked by recurrent floods and the village tracts were impassable. The best of rice does not travel well in rainy weather on open carts, and much of the reimported grain fermented and became unfit for consumption.

“That short rainfalls will again occur and produce crop failures in at least the western half of the district is quite certain. It may be confidently hoped that, in future, the richer agriculturists will understand better the altered range of prices, and will benefit both themselves and the district by holding back stocks for local sale. It is also to be hoped that there will not again be a large influx of starving wanderers from the States and from other British districts. But in any case road-improvement is a necessity and it would be advisable also to extend the railway so that it will be able to feed the district as well as to drain it”.

There has been no famine in the district since the above account was written. Communications have been much improved during the past 20 years and trade has become much brisker. One effect of increased trade is that the level of prices in Sambalpur has tended to an equality with the prices in more advanced districts of the province. The increase in agricultural prices has brought prosperity to the *gaontia* and well-to-do cultivator class but it has effected little appreciable improvement in the standard of the labouring class. Though the working class are little better off now than they were twenty years ago, there is, nevertheless, reason to believe that their immunity from famine is considerably greater. The improvement in communication has now reached such a stage that it should be almost as easy to pour rice into the country as to drain it out. Good roads radiates in all directions, trade connections have been established in all parts of the district, motor lorries ply north, south, east and west. In these circumstances, it is permissible to hope that the export facilities which have given Sambalpur high prices for her produce, would act as efficiently to replenish her stocks in time of need as they do to distribute them in times of plenty.

There has been no other calamity in the history of Sambalpur commensurate with the famine of 1900. The district is not subject to disastrous flooding, though minor floods, have at times, occurred along with the banks of the Ib and the Mahanadi. Epidemics, too, have taken their toll from the population but, excepting the widespread and devastating influenza epidemic of 1918, other sporadic outbreaks of disease, though they have been responsible for much private loss and sorrow, have not attained the dimensions of public calamities. The district is free from plague.

#### **Scarcity of 1941**

The district was again in the grips of scarcity in 1941-42, though there was no official declaration of either famine or scarcity. The rains ceased towards the end of September, 1941. This, coupled with a certain failure of crops in the previous year, aggravated the situation. The

Government apprehended a crisis and advanced liberal loans to the extent of Rs. 32,875. Irrigation received a fresh emphasis. The *Mal* paddy alone was badly damaged. The *Bahal* paddy, on the whole, remained secure. Scarcity was acute in the Paikmal and Jagdalpur areas. Prices of food-grains shot up due to scarcity. The war was also a contributing factor for price rise. The absence of rains from September onwards badly damaged the *Khari* crop. So the winter of 1941 was very unproductive. As a relief measure, farmers had to be engaged in public works.

After 1942, there has been no major natural calamity, though periodical food shortages have been there. In the subsequent years droughts appeared, but they were not widespread nor protracted.

#### Drought of 1954

Drought occurred in 1954. The rainfall in that year was only 48.13 inches, yet the average fall during the period May-September was better particularly during the months July-September. Certain pockets, however, suffered due to freakish rainfall. Nearly 88 Grama Panchayats were either partly or fully affected involving a population of nearly 330,000 and an area of about 88,560 acres (35,867 hectares), the average outturn being about 50 per cent to 60 per cent and in certain pockets about 40 per cent to 50 per cent.

#### Drought of 1965

The drought that befell the district in 1965 was more or less comparable, for its severity, with the famine of 1900. The rainfall was even worse in 1965. During the monsoon of 1899, the average rainfall up to early September in Sambalpur subdivision was 45.51 inches and in Bargarh subdivision 37.78 inches. In 1965, the average rainfall of the district has never been more than 30.35 inches. As in 1900, Padampur Tahsil with a population of 275,172 ranked again with the worst-hit areas during the present drought. The areas irrigated by Hirakud canals were, however, immune from the calamity.

Out of a total population of 1,508,686 of the district, 943,177 people were affected. Towards the end of October 1965 when all hopes for monsoon rains were lost and failure of crops seemed imminent, a number of people belonging to Sohela, Jharbandh and Paikmal Community Development Blocks, who depended on agriculture, began deserting their villages to better off areas in search of employment. Number of people belonging to other affected Community Development Blocks like Bijepur, Bhatli, Gaisilat, etc., also went to irrigated areas to find employment in agricultural operations. A reversal of this trend was, however, noticed towards the end of January 1966, when labour intensive works were taken up in those areas. People began to return to their native places. In

the village Firingimal (in Gaisilat Community Development Block) alone, 50 families left their homes, some for the irrigated areas of Balangir district and some for similar areas in Sambalpur district. Their houses remained locked up. In the same village, a number of people told the Collector that they had sold off their cattle, carts, utensils and other movable belongings. Reports of the selling of household articles like brass utensils etc., had been forthcoming since November 1965. Serious difficulties were also felt in the matter of drinking water. In villages, major portion of the population depended on tanks for drinking water. Due to scanty rainfall, these tanks could not be filled up to their normal levels, and started drying up soon. Again as rains failed, tanks were excessively used for irrigation during Khariff season. As a result, they became empty. The cattle population also suffered considerably for water scarcity. Cattle troughs were constructed in villages where cattle population was preponderant.

For taking up labour intensive works in order to provide employment to the distressed people, a special grant of Rs. 3,36,645 was released and a little over Rs. 6 lakhs was also diverted from the budgets of Community Development Blocks. With the same end in view, a little over Rs. 5 lakhs was allotted for improvement of roads in Community Development Block areas.

## STATEMENT I

## List of Minor Irrigation Projects in Sambalpur district

## (A) Completed Projects

Name of Block	Name of Minor Irrigation Projects	Date of construction	Cost	Area irrigated (in acres)
1	2	3	4	5
			Rs.	
Sambalpur				
Sadar I ..	1. Chaurpur	1964	7,458	24.45
	2. Lamal Kata I & II	1964	16,761	90.00
	3. Jharghati	1966-67	53,370	107.75
Rengali ..	4. Jharanpali Kata I	1963-64	30,260	78.31
	5. Jharanpali Kata II	1965-66	52,850	39.52
	6. Katarbaga	1964	95,349	183.72
	7. Salad Kata	1964	58,757	69.18
	8. Kasipali	..	21,405	59.38
	9. Mangalpur	..	14,596	45.97
	10. Kurla ..	1965	2,297	9.50
	11. Sapnei	1965-66	32,483	9.29
	12. Rampella Munda	..	8,215	12.56
	13. Salad Munda	..	16,192	9.84
Laikera I ..	14. Orsgarh	..	10,087	45.76
	15. Saletikra	1963-64	14,338	37.36
Laikera II ..	16. Aghariabagdihi	1964-65	18,643	63.49
	17. Handatopa	1964	9,869	27.36
	18. Medinipur	1964	22,368	42.97
	19. Tumba lihi	1964	27,600	57.70
	20. Arda	1964-65	32,708	113.31
	21. Chandrapur	..	7,999	24.75
	22. Sialrama	1964-66	22,503	150.00
Laikera III ..	23. Raghunathpali	1964-66	32,850	80.26
	24. Bhadimal	..	..	84.84
	25. Kundurusingha	..	36,278	31.60

Name of Block	Name of Minor Irrigation Projects	Date of construction	Cost	Area irrigated (in acres)
1	2	3	4	5
			Rs.	
Lakhanpus	26. Banjari	1963	..	280.52
	27. Bargad Kata	..	..	62.43
	28. Attabira	1964-65	32,462	190.83
	29. Kusraloikata No. 2	1966-67	29,589	50.00
	30. Kusraloikata No. 3	..	..	127.24
	31. Kusraloikata No. 4	1966	39,816	50.00
Jharsuguda	32. Beherapat	1966	53,202	22.97
	33. H. Katapali	1966	16,765	74.39
	34. Jharianal	1964	19,866	48.05
	35. Katikela	1966	43,736	82.93
	36. Sripura	1964	32,969	96.15
Kuchinda	37. Kuntrakata	1964	4,269	123.53
	38. Kusumi Kata	..	4,544	83.44
	39. Perpetta	1964	2,86,122	1,763.78
Jamunkira	40. Jamunkira	1963-64	99,977	562.43
	41. Sanbhaluchuan	1966	39,641	66.59
Gobindpur	42. Gobindpur	..	22,443	33.85
Barakot	43. Bamparaḍa	1964	9,724	111.23
Naikul	44. Goudsuguda	1966-67	44,587	401.37
Riamal	45. Barghat	1964	30,075	315.71
	46. Kansar	1964	18,410	156.61
	47. Kankarkhol	1966	53,256	82.28
	48. Niktimal	1964	37,327	525.40
	49. Tarang	..	9,544	43.17
	50. Gundiapali	1963-64	32,288	44.84
Paikmal	51. Narsinghanath	1963-64	2,11,950	508.41
	52. Rasamunda	1963-64	3,38,000	625.46



Name of Block	Name of Minor Irrigation Projects	Date of construction	Cost	Area irrigated (in acres)
1	2	3	4	5
			Rs.	
Padampur	.. 53. Dudkamunda	.. 1963-64	29,300	199.53
Bhatli	.. 54. Kamgaon	.. 1965-66	28,060	41.44
Ambabhona	.. 55. Dwari	.. 1963-64	18,800	653.45
Gaisilat	.. 56. Turchha	.. 1964-65	32,000	61.85
S a m b a l p u r	57. Sangramal Kata-5	.. 1964-65	1,00,000	252.72
	Sadar II.			
S a m b a l p u r	58. Ghenupali	.. 1963-64	14,700	83.85
	Sadar III.			
	59. Litimunda	.. 1963-64	6,930	111.47
	60. Badsahirkata-4	.. 1963-64	7,960	34.03
	61. Hatibari	.. 1963-64	27,500	39.03
	62. Kayakud	.. 1963-64	4,34,506	1,213.08
Rairakhol	.. 63. Kuhi	.. 1965-66	15,750	53.52
Naktideul	.. 64. Jharbeda	.. 1965-66	69,600	120.50
	<b>Total</b>	.. ..	..	9,756.85

## (B) Projects under execution

Name of Block	Sl. No.	M. I. P. No.	Est. cost	Date of construction	Designed ayacut		Present irrigation		Remarks
					Kharrif	Rabi	Kharrif	Rabi	
1	2	3	4	5	6	7	8	9	10
BARGARH CIVIL SUBDIVISION									
Bargarh	1	Kotna Kata	39,000'00	1963-64	80	..	18'62	..	..
Paikmal	2	Gupteswar	1,20,400'00	1966-67	250	100	200'13	50	..
	3	Sarakarikata	1,18,900'00	1965-66	170	..	100'20	..	..
	4	Dhandupali	65,600'00	1966-67	120	..	36'77	..	..
	5	Bhoisagar	2,44,000'00	1966-67	45'J	..	36'07	..	..
	6	Dudkijharia	2,06,100'00	1966-67	250	..	76'05	..	..
Padampur	7	Nuapali	2,07,800'00	1966-67	230	..	15'96	..	..
	8	Khadkhadia	1,83,600'00	1963-64	780	..	200'64	..	..
Sohela	9	Victoriasagar	3,33,100'00	1966-67	1,000	350	618'34	..	..
	10	Kelenda <sup>†</sup>	1,11,200'00	1966-67	400	..	..	..	..
Ambabhona	11	Lakhanpur	88,000'00	1966-67	122	38	..	..	..
	12	Ruchida	78,000'00	1963-64	156	..	156'50	..	..

Rs. P.

Name of Block	Sl. No.	Name of M. I. P.	Est. cost	Date of construction	Designed ayacut		Present irrigation		Remarks
					Kharriff	Rabi	Kharriff	Rabi	
1	2	3	4	5	6	7	8	9	10
Rs. P.									
Attabira	..13	Kadobahal	..	1964-65	125	..	154.27	..	
	14	Ghanghati	..	1967-68	450	120	..	..	
Gajsilat	..15	Sardhapali	..	1963-64	110	..	113.27	..	
Bijepur	..16	Bijepur	..	1963-64	210	..	203.56	..	
	17	Keutipali	..	1963-64	68	..	78.32	..	
SAMBALPUR									
Sadar II	..18	Sangramal-4	..	1963-64	430	..	366.71	..	

Sadar III	..19	Badsahir 5	..	8,960'00	1966-67	24	..	38'03	..
	20	Badsahir 6	..	24,69,710'00	1966-67	13	7	130'70	10
	21	Gachira	..	1,43,450'00	1966-67	95	25	2,543'09	..
	22	Hafudera	..	1,67,000'00	1966-67	550	100	508'26	75
Rairakhol	..23	Baishnabjholi	..	80,900'00	1965-66	194	40	..	..
	24	Helei	..	72,880'00	1965-66	96	..	91'31	..
	25	Barbank	..	38,000'00	1963-64	100	..	83'88	..
Naktideul	..26	Girischandrapur	..	4,46,000'00	1968-69	2,860	..	613'10	..
		Total	..	35,87,340'00		9,451	780	3,838'59	135

## STATEMENT II

Area, Production and Yield Rate of different crops for  
the Agricultural Year 1968-69

Crop	Area in hectares	Production in metric tons	Yield in quintals per hectare
1	2	3	4
1. Paddy	526,153	473,343	9
2. Wheat	2,927	5,512	18.83
3. Maize	811	963	11.87
4. Ragi	836	649	7.76
5. Jowar	145	286	19.72
6. Bazra	67	105	15.67
7. Other small millets	10,098	4,143	4.10
<i>Total Cereals</i>	541,037	485,001	8.96
8. Gram	411	480	11.68
9. Tur (Arhar)	969	607	6.26
10. Mung	15,081	9,542	6.33
11. Biri	7,033	3,947	6.61
12. Kulthi	4,741	2,863	6.04
13. Other pulses	3,294	1,952	6.59
<i>Total Pulses</i>	31,529	19,391	6.15
14. Groundnut	18,853	16,700	8.86
15. Til	6,212	2,950	4.75
16. Castor	690	467	6.77
17. Mustard	1,320	578	4.38
<i>Total Oilseeds</i>	27,075	20,695	7.64
18. Potato	1,640	14,393	87.76
19. Sweet Potato	2,094	14,385	68.70
20. Other vegetables	16,658	--	--
<i>Total Vegetables</i>	22,461	--	--

## STATEMENT II—concl'd.

Crop	Area in hectares	Production in metric tons	Yield in quintals per hectare	
1	2	3	4	
22. Mango	..	3,858	74,104	192·08
23. Banana	..	366	3,084	84·25
24. Citrus fruits	..	123	775	63·00
25. Papaya	..	47	940	200·00
26. Cashewnut	..	47	42	9·04
27. Other fresh fruits	..	1,383	..	..
28. Other dry fruits	..	234	..	..
<i>Total Fruits</i>	..	6,058	..	..
29. Chillies (Dry)	..	2,190	1,319	6·02
30. Ginger (Dry)	..	10	6	6·00
31. Turmeric	..	48	126	26·25
32. Garlic	..	283	1,071	37·84
<i>Total Condiments and Spieces</i>	..	2,531	2,522	9·96
33. Tobacco	..	422	238	5·64
34. Sugarcane	..	3,149	19,132	6·08
<i>Fibre Crops</i>				
35. Jute	..	92	513	5·58
36. Cotton	..	24	33	1·38
37. Mesta	..	2,104	12,063	5·73
38. Sunhemp	..	736	1,816	2·47
<i>Total fibre-crops</i>	..	2,956	14,425	4·88

(Production and yield figures of fibre crops are in bales. 1 bale=180 Kg.)

Source— Chief Statistician, Directorate of Agriculture)

## STATEMENT III

**List of Veterinary Hospital/Dispensaries and Stockmen Centres**

## Dispensaries/Hospitals

- |                           |                          |
|---------------------------|--------------------------|
| 1. Arda                   | 17. Jharbandh            |
| 2. Attabira               | 18. Jharsuguda           |
| 3. Bargarh (Hospital)     | 19. Jujomura             |
| 4. Barakot                | 20. Kadobahal            |
| 5. Barpali                | 21. Kolabira             |
| 6. Bhatli                 | 22. Kuchinda             |
| 7. Bheran (Bheden)        | 23. Laikera              |
| 8. Bhojpur                | 24. Lakhanpur            |
| 9. Bijepur                | 25. Naktideul            |
| 10. Burla                 | 26. Padampur             |
| 11. Deogarh               | 27. Paikmal              |
| 12. Dhama                 | 28. Prakaspur            |
| 13. Gaisilat              | 29. Rairakhol            |
| 14. Gogwa                 | 30. Rengali              |
| 15. Gobindpur             | 31. Riamal               |
| 16. Jamunkira (Jamankira) | 32. Sambalpur (Hospital) |
|                           | 33. Sohela               |

## Stockman Centres

- |                  |                            |
|------------------|----------------------------|
| 1. Adgaon        | 8. Brajarajnagar           |
| 2. Babuchipidihi | 9. Buden                   |
| 3. Badmal        | 10. Budhapal               |
| 4. Badsahir      | 11. Charaigaon (Chadeigan) |
| 5. Bagdihi       | 12. Chakarkend             |
| 6. Bargan        | 13. Char mal               |
| 7. Batemura      | 14. Charpali               |

- |                     |                           |
|---------------------|---------------------------|
| 15. Chaurpur        | 47. Kundakhai             |
| 16. Dahigaon        | 48. Kusumi                |
| 17. Dava            | 49. Kuturachuan           |
| 18. Dhubenbud       | 50. Laira (Laida)         |
| 19. Doincha         | 51. Laimura               |
| 20. Fasimal         | 52. Lakhampur             |
| 21. Gandtutum       | 53. Lakhmara              |
| 22. Garpos          | 54. Laumunda              |
| 23. Girischandrapur | 55. Loharchatti           |
| 24. Gourpali        | 56. Manesar               |
| 25. Gunduruchuan    | 57. Naikul                |
| 26. Hatibari        | 58. Paharsirgida          |
| 27. Jagdalpur       | 59. Pakelpada             |
| 28. Jamseth         | 60. Palsada               |
| 29. Jhalliminda     | 61. Panimura              |
| 30. Jhirlapali      | 62. Parmanpur (Patrapali) |
| 31. Kadaligarh      | 63. Parmanpur (Sason)     |
| 32. Kadamdihi       | 64. Paravadi              |
| 33. Kanheipali      | 65. Rajpur                |
| 34. Kansar          | 66. Remenda               |
| 35. Katabahal       | 67. Rengali               |
| 36. Katarbaga       | 68. Resam                 |
| 37. Kesaibahal      | 69. Rusra (Rusuda)        |
| 38. Kesapali        | 70. Sahasapur             |
| 39. Khandol         | 71. Saipali               |
| 40. Khandom         | 72. Saletikra             |
| 41. Khinda          | 73. Samda                 |
| 42. Kirmira         | 74. Sargibahal            |
| 43. Kordola         | 75. Sason                 |
| 44. Kichipali       | 76. Sripura               |
| 45. Kumarbandh      | 77. Talpatia              |
| 46. Kumbho          | 78. Urduna                |