CHAPTER IV

AGRICULTURE AND IRRIGATION

44. The district is situated in the valleys of Ang and the Tel, the two main tributaries of the Mahanadi which flows in the north-eastern part of the district. Important tributaries of the Tel are the Lanth, the Sonegarh and the Suktel which have fertile valleys. The district is suitable for both extensive and intensive agricultural operations. The total cultivable area in the district is 1,357,596 acres of which 1,107,543 acres were under plough in the year 1965-66 and 206,678 acres were sown more than once that year. The subdivision-wise cultivable areas are as follows:

Subdivision		Acre
Balangir	..	340,244
Titilagarh	..	336,745
Patnagarh	..	354,015
Sonepur	..	326,592

The following table shows the land classification in the distric in the year 1965-66:

			Square miles	Acres
1	Total Geographical area	..	3,411·6	21,83,424
2	Forest	..	711	455,040
3	(*a*) Barren, unculturable land (*b*) Land put to non-agricultural use	}	171	1,09,450
4	(*a*) Permanent pastures, other grazing land. (*b*) Misc. tree crops, tree groves not included in net area sown. (*c*) Cultivable waste	}	374·2	239,505
5	Fallow lands	..	97·4	6,2325
6	Area not classified	..	93	59,506
7	Cultivable area	..	1,965	1,257,598
8	Net area sown	..	1,730	1,107,543
9	Net irrigated area	..	253·5	161,873
10	Area sown more than once	..	323	206,687
11	Gross irrigated area	..	334	213,974

The best cultivated areas are found in the northern part of the district in Sonepur subdivision. In 1938, the total cultivated area of this subdivision was 347,040 acres. The southern portion largely broken by undulating land needs considerable effort and expense for cultivation. In 1937, the total cultivated areas of this portion comprising the ex-State of Patna was 913,207 acres.

The area under different classes of land in ex-Sonepur and ex-Patna States are given below :

Classes of land		Sonepur 1938 (In acres)	Patna 1937 (In acres)
Bahal	..	88,310·89	206,727
Berna	..	72,559·29	94,214
Mal	..	67,328·72	84,621
At	..	112,478·21	50,159
Barcha	..	3,996·32	7,890
Bari	..	2,367·11	15,596

The ex-Sonepur State now comprises Sonepur subdivision and the ex-Patna State comprises whole of Balangir, Patnagarh and Titilagarh subdivisions.

45. Land Reclamation

Land reclaimed in various subdivisions is shown below in acres :

Name of Subdivision	First Plan Period 1951-52 to 1955-56	Second Plan Period 1956-57 to 1960-61	Third Plan Period 1961-62 to 1965
Patnagarh	211·77	875·44	149·60
Sonepur	430·36(Reclamation stopped due to settlement operations)		
Titilagarh	19·75	413·02	407·62
Balangir	1,081·24	689·66	826·26
Total	1,743·12	1,978·12	1,383·48

46. Irrigation

Towards 1919, there were 83,211 acres of irrigated land in the ex-State of Patna[1]. This increased to 131,744 acres by 1937. Towards 1938, the ex-State of Sonepur had 124, 117 acres of land with provision of water [2]. The various categories of land having facilities of water-supply or irrigation are given below for the ex-States of Patna and Sonepur separately.

Ex-Patna State

Category of land having irrigation facility		1919	1937
		Acres	Acres
Paddy fields	..	74,406	117,902
Barcha	..	6,081	7,890
Bari	..	2,724	5,952
Total	..	83,211	131,744

Ex-Sonepur State

Serial No.	Classification of land		Pani (Water) in acres, 1938	Bina Pani (Without water or unirrigated) in acres, 1938
1	Barcha	..	3,993·30	..
2	Bari	..	2,370·13	..
3	Bahal	..	73,789·25	14,521·64
4	Berna	..	35,521·00	39,038·29
5	Mal	..	10,410·97	56,917·75
6	At	..	32·35	112,445·86
	Total	..	126,117·00	222,923·54

1. Land Revenue Settlement Report of the Patna State 1937
2. Sonepur State Land Revenue Assessment Final Report, 1938

Ex-Patna Durbar encouraged tenants to dig more tanks and develop other water sources with the permission of the authorities and to utilise water free of rent during the period of Settlement. After the next Settlement such water sources were to be declared as public Jalchar land. Water from these sources were being distributed to the field by the village Panch and villagers were required to keep them in good repair. The increase in irrigated Bari (Kitchen) and Barcha (Sugarcane) lands was due to keen interest of villagers to grow vegetables, tobacco, chilly, sugarcane etc. in such lands by digging wells. An irrigation Khatian was being maintained indicating the plots irrigated and the sources from which they were receiving water. The plots irrigated from wells were not included in the Khatian. Extract from the Wajib-ul-urz of 1937 Settlement report of ex-State of Patna given in the foot note below *indicates the right of Ryots to dig, maintain and repair those water sources. Some of these are now in derelict condition due to silting up of their beds.

A Blockwise list of minor irrigation projects in the district existing in 1965-66 along with their catchment and ayacut are given in Appendix III. Of the total number of 292 projects, 53 have ayacut above 100 acres. Irrigation is being provided from these projects to 11,393 acres in Khari and 815 acres in Rabi. A number of these projects are being renovated and improved upon. After renovation and improvement the total ayacut during Kharif and Rabi is anticipated to increase up to 25,390 acres and 3,459 acres respectively. This low acreage of ayacut served by minor irrigation projects indicates that much of the irrigated area recorded in the Settlement reports of the ex-States of Patna and Sonepur were not having adequate water-supply.

**Private water reservoirs*—(*a*) No rent has been assessed on the water reservoirs recorded in the Rayati Khatian of Rayats. These shall be held rent free by such Rayats during the currency of the settlement after which such water reservoir shall become public Jalchar lands.

(*b*) The Rayats in whose Rayati Khatians their private water reservoirs have been recorded have absolute right over them but have no right to reclaim any portion of such water reservoirs without the special sanction of the State authority previously obtained.

(*c*) Rayat and Ticcadars have free right to excavate water reservoirs within their respective rayati or bhogra lands and such water reservoirs they shall be entitled to hold as their private property without payment of rent in respect thereof for the period of the next settlement.

Public Water Reservoirs—The Work of distribution of water from all water reservoirs recorded in the Jalchar Khatian shall be done under the supervision of the village Panch with reference to the irrigation Khatian of the village. No fee shall be charged for the distribution of water for irrigation.

Repair of Irrigation Works—All water reservoirs entered in the Jalchar Khatian of the village shall be kept in good repairs by the Rayats working under the direction of the Ticcadar. All expenses incurred for keeping the roads and water reservoirs in good repairs may be met from subscriptions raised from the villagers by the Ticcadars in consultation with the village Panch—the Ticcadar, his co-sharers and members of the village Panch also contributing in proportion of the area held by them.

At present irrigation facility from Hirakud Canal system is available for 113, 849 acres in Binka, Dungripali, and Agalpur Block areas. The details of the area irrigated Blockwise are given below :

Name of the Block		Area in acres irrigated by Hirakud Canal System
Binka	..	50,015
Dungripali	..	62,081
Agalpur	..	1,753

A number of hill streams emerging from the Gandhamardan Hills are flowing through this district and some of them have water-flow throughout the year. No major and medium irrigation projects have been constructed on these streams. During the drought of 1965, the Mathonpala medium irrigation project on the Khanda river has been taken up. The possibility of taping the streams of the Ang Guchali, the Suktel at Patharkhandi, the Lanth at its upper and lower reaches, the Kankadajor at Bolpadar, the Jamunajor at Sittigat, the Bandasera at Dangachancha near Dehita, the Santajor at Kurkurkai, the Jaminijor at Lungurapali are being investigated.

Lift Irrigation

From wells and tanks irrigation by lift are practised for cultivation of sugarcane and vegetables. The rocky soil of this district limits the scope for sinking deep wells for lift irrigation. The water pumps of Grama Panchayats are being utitised to irrigate fields from water available in nearby tanks and streams.

From tanks and wells 53,799 acres of land are having partial water supply by lifts.

47. Agriculture

(i) Soil

The table-land comprising the subdivisions, of Athmallik and Angul in Dhenkanal district, Baudh subdivision in Baudh-Khondmal district on either side of the Mahanadi and the area between the Suktel basin in Balangir district and the left bank basin of the Tel in Kalahandi district, consists of black earth popularly known as the 'black-cotton soil or regur' of India. The annual precipitation in this area is 1,250 mm. The soil in general has a higher content of clay. Lime

concretions known as Kankar or genguti are found mixed with the soil. The high clay content of the soil makes it crack during summer and sticky during the rains.

The soil is alkaline in reaction and the phospates vary from 7·5 to 8·5 . It generally contains soluble salts in all horizons though these do not reach the toxic limit for plant growth. Percentages of potassium, lime and magnesium are high but the nitrogen content is low, as is common in the Indian soil ranging between 0·12 per cent to 0·05 per cent. The black soil of Orissa is classified under four types: Angul, Baudh Loisinga and Aska.

Loisinga type—The soil is of grey colour and sticky. The average annual rainfall in the area is about 1,400 mm. but temperature is high. There is very little Sal forest, but association of scrub forest with Acacia arabica is met with. There is less occurrence of lime concretion and the exchangeable calcium in the exchange complex is about 58 to 60 and there is some amount of sodium and magnesium in the exchange complex. [1]

"The sub-soil in Loisinga region consists of deurite petrified flour compressed and hardened and argilite. It is very white and is locally known as Chui"[2]. Yellow soils and mixtures of red and balck soil are also found at places. The soils are deficient in phosphate especially in the surface and are generally deficient in Nitrogen.

Soil is fertile in Sonepur subdivision. From Balangir south wards the country is largely broken by undulating forest land, for the most part unsuitable for cultivation but here and there considerable patches of flat lands are met with. The soil of this tract can be classified as follows.

(1) Khalia

Hard-white clay sometimes mixed with lime concrete. It varies as follows—

(*a*) Chandi Khalia	..	White in colour and very hard
(*b*) Gut Khalia	..	White, hard and saline clay.
(*c*) Genguti Khalia	..	White and hard, mixed with lime stone.
(*d*) Ordinary Khalia	..	Agricultural clay.

(2) Balia

Sandy soil. It is mixed with clay. It is also called *Pandakapithia* The soil is suitable for the cultivation of paddy.

(3) Badmatta or Kanhars

Black soil. In the *Khondan* tracts (the southern area of the Patna ex-State inhabited mostly by the Khonds) it is called Malwa.

[1] *Soils of India*—I. C. A. R.—1963 P. 217-18

[2] *Farmers* of India Vol-III, P. 87

(4) **Pankua or Kachharia**

Low lying land on the bank of rivers.

(5) **Bagudia**

Gritty soil.

(*ii*) **Classification of land**

(1) AT

The high land which is dependent on rainfall for its moisture. It is divided into At Khari and At Mamuli depending upon availability of manure from village drainage.

(2) MAL-SAMAN

These are embanked land lying high on a slope. This is divided into four categories according to facility of irrigation and supply of manure, i. e. Mal-saman, Kharipani, Mal-saman Khari, Mal-saman Pani, Mal-saman Mamuli.

(3) BERNA

Land lying along the main surface drainage and embanked. It is divided into Berna Kharipani, Berna Khari, Berna Pani and Berna Mamuli depending upon facility of irrigation and supply of manure.

(4) BAHAL

The low-lying land on the main surface drainage and embanked. It is divided into Bahal Kharipani, Bahal Khari, Bahal Pani and Bahal Mamuli depending upon facility for irrigation and manure.

(5) BARI

Manured land round the village site, which receives the village drainage. It is divided into Bari Kharipani, Bari Khari, Bari Pani and Bari Mamuli depending upon the extent of manuring and irrigation received.

(6) BARCHA

Sugar-cane land. These plots are generally prepared from At or Mal lands, and are irrigated from wells. Depending upon availability of manure it is divided into Barcha Khari and Barcha Mamuli. The plot is alternately sown with cane and pulses or wheat.

(7) BAGICHA

Plots containing fruit trees are recorded under this category.

The scale of soil factor adopted for different classess of cultivated land and average production of main crops in them and rent fixed per acre of these lands in Settlements of 1937 in Patna and 1938 in Sonepur are given below.

Patna ex-State

Sl. No.	Class of cultivated land	Soil factor adopted	Average yield of paddy or other main crop			Rent
				Maund	Seer	
1	2	3	4	5		6
						Rs. A. P.
1	Bahal Kharipani ..	24	Paddy	26	22	1- 2- 3
			Wheat	4	0	..
			Chana	3	32	..
2	Bahal Khari ..	20	Paddy	25	35	0-14-7
3	Bahal Pani ..	20	Paddy	21	35	0-14- 7
			Wheat	9	20	
			Chana	4	15	
4	Bahal Mamuli ..	18	Paddy	22	32	0-13-1½
			Chana	9	20	
5	Berna Kharipani ..	20	Paddy	26	..	1-2-3
			Mustard	3	0	
6	Berna Khari ...	18	Paddy	21	8	0-13-1½
7	Berna Pani ...	18	Paddy	18	9	0-13-1½
8	Berna Mamuli ..	16	Paddy	19	8	0-11-7½
			Mustard	7	15	
9	Mal saman Khari pani ..	16	Gram	3	32	0-11-7½
10	Mal saman Pani ..	14	Paddy	18	34	0-10-3
11	Malsaman Khari ..	14	Paddy	15	28	0-10-3
			Mustard	3	39	
12	Mal saman Mamuli ..	8	Paddy	15	26	0- 7-3½
			Masur	4	25	
13	Bari Kharipani ..	20	Jute	8	22	2- 4-6
			Tobacco	25	16	
			Red-Pepper	19	0	
			Garlic	23	10	
			Onion	38		
			Mustard	9	15	
			Wheat	11	6	
14	Bari Khari ..	20	Mandia	7	29	1- 2-3
			Mustard	7	36	
15	Bari Pani ..	50	..	..	..	1- 2-3
16	Bari Mamuli ..	..	Mustard	5	3	0- 7-3½
17	Barcha ..	5	Sugarcane	32	15	2-4-6
			Muug	4	1	..
			Wheat	6	35	..
18	At Khari ..	3	..	..	..	0-7-3½
19	At Mamuli ..	3	..	..	..	0-3-8

Sonepur ex-State

Sl. No.	Class of cultivated land	Ist Settlement (Soil factor)	2nd Settlement (Soil factor)	3rd Settlement (Soil factor)	Average yield of crops	Average rate of rent per acre
1	2	3	4	5	6	7
						Rs.A.P.
1	Barcha ..	40	40	50		3-5-0
2	Bari ..	8	8	20		1-9-0
3	Bahal Kharipani Dofasali ..		26	30		2-6-0
4	Bahal Pani Dofasali		22	24		1-14-0
5	Bahal Khari pani ..	24	24	24	Md.32-21S.	1-14-0
6	Bahal Khari ..	20	20	20		1-9-0
7	Bahal Pani ..	20	20	20		1-9-0
8	Bahal Sadharan ..	18	18	18		1-7-0
9	Berna Kharipani ..	20	20	20		1-9-0
10	Berna Khari ..	18	18	18		1-7-0
11	Berna Pani ..	18	18	18	Md.29-22S.	1-7-0
12	Berna Sadharan ..	16	16	16		1-4-0
13	Mal Kharipani ..	16	16	16		1-4-0
14	Mal Khari ..	12	12	14		0-15-0
15	Mal Pani ..	12	12	14	Ms.27-36S.	0-15-0
16	Mal Saman ..	8	10	10		0-13-0
17	Mal Tikara		6	6		0-8-0
18	At Kharipani ..	8	8	15		1-3-0
19	At Khari ..	5	5	5		0-6-0
20	At Pani ..	5	5	5		0-6-0
21	At Sadharan ..	3	3	3		0-4-0

Settlement operations have been completed recently in Sonepur subdivision. The soil factors adopted and average rate of rent for different types of land have been given in Chapter XI.

48. Crops

The important crops grown in this district are paddy (Early, Medium, Late varieties in Kharif and Dalua in summer) wheat, maize, Mung, Biri, Kulthi, Mandia, Kudo, Gurji, Arhar, Massor, Khesari, Chana, til, mustard, castor, groundnut, onion, garlic, chillies, tobacco, mesta, sugar-cane and vegetables.

From the Settlement report of ex-State of Patna 1937, it is found that 9,00,063 acres were under the following crops :—

		Acres
1. Paddy	..	391,322
2. Til	..	161,036
3. Pulses	..	87,756
4. Kulthi	..	111,344
5. Kudo and Gurji	..	100,979
6. Sugar-cane	..	7,027
7. Castor	..	5,508
8. Mustard	..	1,477
9. Cotton	..	1,037
10. Wheat	..	345
11. Tobacco	..	2,867
12. Other crops	..	29,355

The area under different crops in 1964-65 are given in Appendix IV

(*i*) Paddy

It is mainly grown in *Kharif* season by ways of broadcasting and transplanting. The paddy is mostly sown broadcast and the sowings are known as (*a*) Kharidi (dry sowing) which takes place before the break of monsoon, (*b*) Batri (wet sowing).

The various kinds of paddy grown are:

(*a*) AT DHAN

The following varieties are locally grown:

Sitabhog, *Pandernuakhai*, *Bhudoshingeri*, *Satka*, *Saria*, *Sankra Dhobli* or *Chaulimenjo*, *Kalechi*, *Palsaphul*, *Kuraiphul*, *Sukunabhata* and *Rani or Lakshmikajal*.

Improved varieties– Bombay 76, MTU-15, Taichung Native-1 Tainan-3, Tauchung-65, MTU-20.

(*b*) MAL-DHAN

The varieties locally grown are :

Badkusma, Karni, Hiranjhutri, Dahikharkuili, Sanbento, Malpathri, Tamdia, Dahipudina, Dahichitri, Jhuler, Kankria or *Sankesri* and *Biramani*. All these ripen in autumn.

Improved varieties– Type 812, Type 1145, Berhampur 11, Central Rice Research Cuttack-141:

(*c*) BERNA DHAN

The local varieties are

Dudhkhaaika, Kalikuji, Banko, Raisiri, Kankria, Phuler and *Suatiianti*. These varieties ripen in the beginning of winter.

(*d*) BAHAL DHAN

The local varieties are:

Batraj, Baidyaraj, Pathri, Ruknibhog, Raghusai, Goindi, Rajgoindi Makarkam, Nuniapan, Maharaji, Chinamal, Jhilliparagi, Sunapan, Samudrabali, Krishnakala, Radhaballav, Tulsikanthi, Ratanchuri, Hunda, Sagardhuli, Matia, Jalchingri, Tentulia, Badkharkuili, Haldigundi, Charaiguri and *Amgachhi*. These ripen in winter.

(*e*) IMPROVED VARIETIES

Berhampur-6, Berhampur-9, Type 1242, Type 90, Indian Sandow, Jayapur-7, and Coimbatore-30, P.T. B.-10 and B-76 are raised as Dalua paddy. In At land early paddy, having maturity within 60 to 90 days, is grown. Harvesting of this paddy is done in September followed by Biri, Kulthi, Arhar, mustard, wheat, Ragi, Khesari, etc. Similarly in the Mal land and upper Berna land medium paddy maturing towards early winter is followed by potato, wheat, Biri or Mung. In the Hirakud irrigated areas and Bahal land Sarad paddy maturing late in winter is followed by wheat or Dalua paddy. The areas under autumn, winter and summer paddy are 33,000 acre ; 669,000 acres and 9,355 acres, respectively.

(*ii*) Pulses :

Pulses are the important crops next to paddy. The coverage of pulses is 187,497 acres (17·5 per cent of the total cropped area). As much as 4,000 to 5,000 tons of blackgram (Biri) and other pulses are exported from the district to far off places in Uttar Pradesh and Madras. Khesari channa (Gram) are broadcast in 63,277 acres of medium and late paddy fields just before the harvest of paddy. Jhain Mung has been introduced newly with the advent of irrigation in the Hirakud Canal area. Mung is cultivated in 15,690 acres under *Kharif* and 24,850 acres under *Rabi*.

It has been very popular with the cultivators. Biri too occupies a prominent place having a coverage of 32,054 acres under *Kharif* and 8,780 acres under *Rabi*. Biri and Kulthi are sown in August and September and ripen in December—Mung is sown a little later than the sowing of Biri and ripens in December. Arhar is sown in June and ripens in February. Gram is sown very sparingly. It is sown in September and ripens in February. Kultha is raised from 25,493 acres, Gram (Buat) from 6,345 acres. These crops yield 4 to 5 maunds an acre on the average. Practically no manuring is needed for pulses.

(*iii*) Oil-seeds :

Til is grown mainly in Patnagarh and Titilagarh subdivisions. Groundnut is grown mainly in Patnagarh, Loisinga and Agalpur Panchayat Samitis. An oil crushing unit is now in operation in Agalpur for groundnut crushing. Records show growing of different varieties of oil-seeds, til (sesamum) and castor in 1908 which covered 21 per cent of the total cropped area. At present Til, mustard, castor, linseed and groundnut are grown and the coverage is about 74,239 acres (6·5 per cent of the total cropped area). Til is raised from 31,900 acres, mustard from 15,704 acres and groundnut from 18,477 acres. The average yield varies from 3 to 4 maunds per acre. They are grown both in *Kharif* and in *Rabi*.

(*iv*) Surgar-cane:

A survey was taken up in the 4 Panchayat Samitis of Balangir-I&II, Loisinga and Tarbha to find out, if there is any contiguous cane growing area to have a small sugar industry. The survey results were promising. The Zilla Parishad recommended establishing small sugar units one at Menda in Tarbha Block and the other at Sarma in Balangir Block I, as sugar is grown on more than 500 acres within a radius of 5-6 miles from these villages along the Tel river basin. During the year 1908, it was "little grown in this State" (Patna) and occupied only 1 per cent of the cropped area. A present, the area under its cultivation is 9,754 acres (1965-66). It is planted in between *Kharif* and *Rabi* seasons. It yields about 500 maunds per acre.

(*v*) Wheat:

The current acreage is 4,675 (1965-66). It is grown in *Rabi* season It is sown by broadcast or by line sowing during the months of October and November. In some areas, wheat is grown without irrigation. This is done by keeping the low lands fallow during *Kharif*. The soil conserves moisture and needs no irrigation. The yield per acre varies from 4 Mds. to 6 Mds. The chief wheat growing areas, are Titilagarh and Balangir-II Panchayat Samitis. Besides wheat

maize is raised from 6,964 acres, Jawar from 730 acres, Ragi from 11,187 acres, Bajra from 91 acres, Kudo, Gulji, Kango, Suan and other small millets from 94,582 acres. Large acreage under Kudo and Gulji is marked in Patnagarh and Titilagarh areas. The total acreage under wheat Bajra, Jawar, Maize, Ragi, Kudo, Gurji, Suan and other small millets and cereals comes to 118,138 acres (10·5 per cent of the total cropped area).

(*vi*) **Vegetables :**

Cauliflower and cabbage are grown in Titilagarh subdivision chiefly in the police-station areas of Sindhekela and Kantabanji. Vegetables generally go out to far off places like Bhilai. Onion and chilles too are grown as ***Rabi*** crop. 3,000 acres are under onion and chilles in Titilagarh subdivision alone. Varieties of vegetables grown in the district are Bhendi (Ladies-finger), Saru, Kakudi (cucumber) Panikakharu (ashpumpkin), Barbati (cow pea), Jahni, ribbcol gourd (Luffa acutangula), Lau (bottle gourd), Baigan (brinjal), Seem (beans), Kandamul (sweet potato), onion, garlic, chillies, Dhania (coriander seed), etc.

Tomato, potato and radish are grown in winter. Summer vegetables like ladies-finger and those belonging to pumpkins family are also grown. The area under cultivation of vegetables are 62,237 acres (5·5 per cent of the total cropped area). The acreage under different vegetables are given below :

		Area (in acres)
Potato	..	672
Cabbage	..	1,877
Cauliflower	..	2,325
Brinjal	..	7,422
Tomato	..	2,325
Ladies-finger	..	2,472
Sweet potato	..	13,605
Peas	..	7,692
Saru	..	1,541
Onion and Garlic	..	6,392
Chillies	.	7,417
Other vegetables	..	16,336

The average yield of brinjal and such other vegetables is about 8,000 pounds per acre. A special feature in the district is that tomato and ladies-finger are cultivated in all the seasons of the year.

The district has long since become self-sufficient in vegetables. It was once an importing centre of English vegetables like cauliflower, cabbage, knol khol, etc. but it has now become an exporting area.

(*vii*) **Fibre crops**

Cotton is grown in 289 acres. Mesta and sunhemp are grown in 5,949 acres and 8,233 acres respectively, while Jute is being raised in 157 acres. The yield of fibre varies from 8 to 10 maunds and in exceptional cases it goes up to 15 maunds.

(*viii*) **Tobacco**

Tobacco is grown in the backyard of the house in almost all the subdivisions and the cultivators pay much attention to this crop. This crop gives a good income, besides ful filling the need for smoking and chewing. This is one of the principal cash crops of the district and those who grow it, know the art of curing the leaves. 4,055 acres of backyard of houses are covered under tobacco cultivation.

49. Soil Conservation

Soil conservation has been taken up in this district since 1962-63 under the control of Kalahandi (Bhawanipatna) office. From May 1964, the office of one Assistant Soil Conservation Officer has been opened at Balangir.

The main activities are contour-bunding either by Department or through Blocks (Panchayat Samitis), Plantation of cashewnuts and Sisal in fields subject to top erosion in deforested lands, pasture development in deforested areas subject to erosion, checking of stream bank erosion in selected spots, and checking of erosion in the catchment areas of selected Minor Irrigation Projects. During the period from 1962-63 to 1965-66 contour-bunding has been done in 13,21 acres out of which 928 acres have been done by Panchayat Samitis and 395 acres through Departmental agencies. Cashewnut and sisal plantation has been done in 666 acres and pasture development work in 251 acres. At Karlakhaman in Sonepur subdivision Sisal cultivation and cashewnut plantation have been done in a farm extending over 478 acres. This farm is also a demonstration centre of soil conservation work. At Khojenpali near Balangir a Pilot Project on pasture development in eroded land has been taken up and fodder grass is being sold daily to the cattle owners. At Binka and Sonepur pasture development work has also been taken up in 30 acres and 71 acres, respectively. Cashew plantation has been taken up at Saintala in 120 acres of land

and in 38 acres at Sonepur and 30 acres in Loisinga. Contour-bunding has been done in 128 acres in Titilagarh Block, 147 acres in Balangir Block, 32 acres in Loisinga Block, 38 acres in Saintala Block, 124 acres in Sonepur Block and the remaining 457 acres in other Blocks. In order to supervise the soil conservation activities in Blocks, two Soil Conservation Assistants have been posted in Titilagarh and Sonepur Blocks and seven Surveyors at Sonepur, Loisinga, Saintala, Kharakhol, Titilagarh and Agalpur Blocks.

Under the Soil Conservation Department at district level there is one Assistant Soil Conservation officer with four Soil Conservation Assistants in charge of Plantation, Survey, Soil Conservation Demonstration Centre and Stream Bank Erosion Control Schemes. The other staff includes five Junior Soil Conservation Assistants, three Surveyors, one Field Assistant, three Bhumi Rakshyakas, two Plantation guard and six Chainmen.

Waste land survey has been made and mapping of soil subject to soil erosion is under progress.

For scientific soil treatment detailed survey on the basis of catchment of rivers to be controlled and planning on the basis of watershed area are necessary. Conservation farming has been taken up in contour-bunded areas as a follow up work. Survey is in progress at Rampur in Agalpur Block for 1½ miles of Stream bank Erosion Control work in the Ang catchment area under Erosion Programme of Minor Irrigation Projects. Survey of the catchment area of Lakshmijor and Gandhrel Minor Irrigation Projects in Balangir I and II Blocks area have also been taken up.

50. Changes in crop areas

Availability of irrigation has increased the cultivated area under *Kharif* and *Rabi* in Dungripali and Binka Block areas. Jhain Mung as the second crop is cultivated in about 26,925 acres in Binka, Dungripali and Agalpur Block areas after harvesting Sarad paddy in December At present there is no podu cultivation in the district. Crop areas for different years are given at Apyendix V.

51. Agricultural Implements

Almost all the older types of agricultural implements, such as *Desi* plough (Langal), *Desi Korada*, leveller are in use. Improved implements are slowly getting in. As yet, a few light iron ploughs have been supplied to the cultivators. Different Panchayat Samitis are getting light iron ploughs for making demonstration of their use. Introduction of heavy iron ploughs is not feasible owing to low draft power of local bullocks. The Japanese weeders have become popular.

The following agricultural implements are in use.

(i) Country Plough (Langala)

The implement is made of *Sal, Bandhan, Sirisa,* or mango wood and mild steel. It is operated by two bullocks and one man and is usd

Green-manure is slowly gaining popularity. In order to increase production of green-manuring seeds, schemes for their multiplication are being operated in the Blocks.

The following figures show that the consumption of chemical fertilisers is gaining popularity :—

1961-62	..	193 tons
1962-63	..	248 tons
1963-64	..	607 tons

During 1963-64, 311 tons of Chemical fertilisers were distributed in the irrigated areas of Binka and Dungripali Blocks.

55. Diseases and Pests

About 6 kinds of rice pest are common. These are Rice gall-fly, Rice Hispa, Rice Case-worm, Grass hopper, Rice bug and swarming caterpillar. The common rice diseases are Rice blast, Helmithesporium, Foot rots and Stack burn.

Gall-fly is the major pest in irrigated areas. In Binka and Dungripali canal irrigated areas it seriously affected the crops in 1963-64. The closure of canals during the next summer helped the prevention of this pest to a great extent. Special measures of mass scale operation in about 6,000 acres during the year 1963-64 were undertaken to educate the people to prevent the occurrence of this pest by timely measures of prophylatic spraying operations. In order to prevent the pest, stubbles are collected and burnt. Before transplantation, it is necessary to dip the seedlings in D. D. T. (Dichloroe Dephenyl Trichloroethane) Spraying of Folidol or Endrex during vegetative phase of the crop also yields results.

For prevention of Rice Hispa dusting is done with 5 per cent Benzen-Hexachloride or Dichloroe-Dephenyl-Trichlcroethane.

Rice case-worm, another paddy pest, is prevented effectively by use of insecticides. For this, the fields are flooded and a thin layer of kerosene oil is put on the surface of the water after which the caterpillars on the plants are dislodged by a rope. Dusting of 5 per cent to 10 per cent Benzen—Hexachloride is done or spraying of 0·1 per cent Folido or Endrin may be taken up. The insecticide like Endrex and Benzen Hexachloride are popular with cultivators.

Grass hoppers are controlled by scrapping and cleaning of bunds in summer. Dusting of 5 per cent Benzen—Hexachloride or 5 per cent Aldrin on the crops and on field bunds at the rate of 8 to 10 kg. per acre is also effective.

For control of Rice bug dusting of 5 per cent Benzen Hexachloride or Aldrin on the crops and on field bunds at the rate of 8 to 10 kg. per acre is also effective.

For control of Rice bug dusting of 5 per cent Benzen Hexachloride or Aldrin 8 to 10 kg. per acre is usually applied.

Swarming caterpillar are put down by dusting Benzen Hexa chloride or Dichloroe-Dephenyl-Trichloroethane or Aldrin, and spraying of Folidol.

Rice blast, which is a paddy disease, is prevented by seed treatment. Usually 9 gm. of Agrosan G. N. or cerasan is necessary per 37 kg. seeds. While the plants are in nursery bed Bordeaux misture are spayed. Dusting the plant when it is 15 days old with Agrosan G. N. or Cerasan gives effect.

Helmtihesporium (or Brown spot) is checked by treating the seed with 9 gm. of Agrosan G. N. or Cerasan per 37 kg. seeds. The plants are sprayed in nursery bed or paddy fields with Bordeaux misture.

Foot rot, another kind of paddy disease, is noticed in the nurseries where infected seedlings become pale, thin and banky. It is prevented by seed treatment with fungicide. For this treatment, the recommended dose is 3 gm. of Agrosan G. N. per 12 kg. seeds. The Agrosan G. N. mixes with the seed before sowing.

Seem borers of paddy are a type of paddy pests which are controlled effectively by timely use of Endrex and Benzen Hexachloride dust.

During the year 1966-67 Khariff season, Jassids were noticed to have attacked on an area of 79,280 acres and this could be effectively controlled by spraying and dusting operations.

Wheat is susceptible to two kinds of diseases, namely, Loose smut and Rust. Loose smut is checked by growing resistant varieties. Treatment of seeds is done with organo-mercurial compounds at the rate of 2 gm. per 12 kg. of seeds. For the control of Rust in wheat, dusting of fine sulphur at the rate of 10 kg. per acre is done.

The occurrence of Red rot in sugarcane is very negligible, the incidence being 1 per cent to 2 per cent of the total sugarcane area. For its prevention, resistant varieties and disease-free setts are used. Endrin at 0·1 per cent concentration checks stemborers in sugarcane.

Potato is affected by wilt and blight (early and late). Both early and late Blight are prevented by spraying of Dithane at the rate of 75 gms in 20 litres of water. The common potato pests are tubermoth and the white ants. Tubermoth is prevented by timely spraying and the white ants by dusting with 5 per cent aldrin at the rate of 30 kg. per acre in the soil before sowing.

Beetles affect vegetables like, brinjal, potato, lady's finger, etc. and is prevented by dusting 5 per cent to 10 per cent Dichloroe-Diphenyl-Trichloroethane at the rate of 15 kg. per acre.

56. Fragmentation of Holdings

Balangir has the highest percentage of medium-sized holdings, i.e., holdings between 11 to 33 acres.

The average size of plot is 0·33 acre. 52·2 per cent of the total land owning families have land within the size of holdings of 9 acres or less and 15·5 per cent of the families own lands consisting of holdings of 10 to 25 acres or above . The detailed distribution of land among rural families according to different sizes of land is given below* :

Size of land owned	Percentage of the rural land owning families
Less than one acre ..	2
One acre ..	7
Two acres ..	10
Three acres ..	7·5
Four acres ..	6·8
Five acres ..	6·2
Six acres ..	4·7
Seven acres ..	3·3
Eight acres ..	2·9
Nine acres ..	1·8
Ten to fourteen acres ..	7
Fourteen to Nineteen acres ..	3·4
Twenty to Twenty-four acres ..	1·5
Twenty-five acres and above ..	3·6

57. Agricultural Farms

(*i*) Rajendra Experimental Farm, Balangir

The farm started in the year 1943. It made experiments on the lines of Provincial Experimental Farms and carried on various agricultural activities for the benefit of rural population. It covers an area of 123 acres where generally paddy and wheat seeds are miltiplied. Use of improved agricultural implements are also demonstrated in the farm.

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A tank inside the farm premises is utilised for irrigation. The paddy-yield of the farm per acre is 29 maunds against the normal yield of 15–20 maunds. The farm is managed by the following staff:—

(1) Farm Manager

(2) Agricultural Overseer

(3) Two Agricultural Sub-Overseers

(4) Four Fieldman Demonstrators

(5) Clerk

(6) Peon

(7) Ten Permanent Labourers

(ii) **Sonepur Farm**

It started in the year 1946 with an area of 85 acres. Paddy, wheat groundnut and vegetable seeds are mainly produced here. It also serves as a demonstration farm. The normal paddy yield is 30 mounds per acre. There is a tank to provide irrigation to the farm.

The farm has been selected for implementation of the progeny orchard scheme during 1961. Accordingly, a plan was drawn up to increase the existing orchards of mango and citrus fruits.

The farm staff consists of—

(1) Agricultural Overseer

(2) Two Fieldman Demonstrators

(3) Peon

(4) Three Permanent Labourers

iii) **Birmaharajpur Farm**

The farm came into existence during 1956-57. It extends over an area of 50 acres. Its principal activity is multiplication of paddy and wheat seeds. There are one Agricultural Overseer, two Fieldman Demonstrators, one Peon and three Permanent Labourers.

(iv) **Desil Farm, Titilagarh**

The farm came into being in 1958-59 with an area of 35 acres. Paddy seed is multiplied in the farm. The staff comprises one Agricultural Overseer, one Fieldman Demonstrator, one Peon and three Permanent Labourers.

(v) Rampur Farm

It started in the year 1958-59, with an area of 21·61 acres for multiplication of paddy seeds. The farm staff consists of one Agricultural Sub-Overseer and one Permanent Labourer.

(vi) Madhughat Farm

This is a new farm started in 1964-65.

58. Agricultural Shows

Agricultural shows, one at the district level and two at Subdivisional level take place every year. The aims of these shows are to exhibit different activities of Agricultural Department and various developmental work and improved techniques that are taking place in agriculture which the cultivators may emulate.

59. State Assistance to Agriculture

Loans under the Agriculturists' Loans Act and Land Improvement Loans Act are ordinarily granted to cultivators. Loans advanced from 1960-61 to 1966-67 are shown below.

Years	A. L. Act	No. of loanees benefited	L. I. Act	No. of Loanees benefited
	Rs.		Rs.	
1960-61 ..	1,47,000	..	66,000	..
1961-62 ..	1,89,342	..	1,03,250	..
1962-63 ..	36,550	..	8,800	..
1963-64 ..	25,565	..	8,400	..
1964-65 ..	18,000	..	3,000	..
1965-66 ..	5,94,500	4,526	50,000	193
1966-67 ..	90,50,000	61,314	1,75,000	979

(B) ANIMAL HUSBANDRY

60. General Condition

General condition of the cattle is poor. There is insufficient pasturs and stall feeding is not found except in a few Government Farms. As old cattle, which are useless either for milk yield or for ploughing, cannot

be got rid of they are kept solely for production of manure from the cowdung. Use of buffaloes for ploughing is prevalent to a larger extent than in the coastal districts of Orissa.

No fodder crop is specially grown for the cattle. They solely susbsist on what they graze in the field. The cultivators use buffaloes extensively for ploughing. Cows yield very low quantity of milk. The daily average milk-yield of a cow is only 0·15 litre.

61. Dairy Farm

There is a dairy farm near Balangir town which covers an area of 250 acres. The farm started in 1936. The Administration Report of 1945-46 states: "The State Dairy Farm claims to be one of the best managed and model institutions of its kind in the Eastern States Agency. This institution has been started with a view to supply pure milk, cream ghee, butter, etc., to the Palace, Hospital, College and School students and the general public of the town. The principal object of this farm, however, is to improve the breed of the State cattle".

The farm now maintains graded Sindhi cows, Murrah buffaloes and herds of Khariar cows for purposes of breeding. Besides the breeding work, the farm also supplies milk to some extent to the town Facilities for pasteurisation of milk do not exist in the farm. It has been named as "District Livestock Breeding Farm".

A statement showing number of cows and buffaloes maintained in this farm and yield of milk from 1959 to 1964 is given below:

Year	Cows		Buffalow		Others		Total	Milk yield in lbs.
	Milch	Dry	Milch	Dry	Calves	Bulls		
1959 ..	61	52	7	5	175	..	300	103,492
1960 ..	82	49	10	5	250	..	396	142,740
1961 ..	61	45	10	4	258	..	378	99,913
1962 ..	68	44	8	3	249	20	392	110,723
1963 .	71	58	10	3	237	40	419	124,663
1964 .	77	69	8	5	319	22	500	122,018

62. Expanded Nutrition Programme in Community Development Blocks

Patnagarh, Titilagarh, Deogarh, Loisinga and Dungripali Blocks have been covered under this programme of the United Nations International Children's Emergency Fund. Each of these Blocks has a main poultry unit and10 sub-units. Each main unit and sub-unit is of deep litre pattern having 40 hens and 6 cocks.

Apart from this, there are departmental and Block poultry units comprising 20 hens and 2 cocks at Saintala and Kantabanji. The Adibasis rear poultry mostly of country breed.

63. Research Centres and Model Farms

With a view to improving the quality of breeds and secure greater output, bull centres, buck centres, District Livestock Breeding Farm have been opened in the district. An Indian Council of Agricultural Research Centre has been attached to the Farm at Balangir. Bulls supplied from this farm are being used for upgrading the local cattle.

64. Cattle fairs

Cattle fairs take place at Balangir, Titilagarh and Rampur at intervlas throughout the year.

The livestock population of this district as per census 1961 is given below:

Cattle	..	638,043
Buffaloes	..	123,221
Sheep	..	146,358
Goat	..	178,683
Poultry	..	412,792
Pigs	..	6,460
Ducks	..	9,206
Horse, Ponies, mules and donkeys		1,464

65. Animal diseases

The principal animal diseases prevalent in the district are Haemorrhagic Septicaemia, Black quarter, Foot and Mouth disease, Rinderpest, Anthrax, Ranikhet Disease, Fowl pox andRabbies. These are ill contagious.

Non-contagious diseases common among the livestock are typpanists, Horn cancer, Broken horn, String halt, Dystocia Retention of placenta, Pediculosis and Impaction.

Statistics relating to animal diseases (seizures and death) from 1957-58 to 1963-64 are given below:

Period	Rinderpest		Haemorrhagic	
	Seizure	Death	Seizure	Death
1957-58 ..	200	109	118	95
1958-59 ..	370	22	110	106
1959-60 ..	14	8	92	60
1960-61 ..	..	..	30	26
1961-62 ..	123	46	32	28
1962-63 ..	408	147	109	82
1963-64 ..	85	46	55	33

Period	Black Quarter		Foot and Mouth diseases		Other gious		Conta- diseases	Total
	Seizure	Death	Seizure	Death	Seizure	Death	Seizure	Death
1957-58	6	2	3,773	..	..	..	4,100	209
1958-59	..	..	3,232	..	..	..	3,406	124
1959-60	..	..	2,601	2	..	..	2,711	106
1960-61	9	8	3,687	25	2	..	3,728	59
1961-62	37	34	2,903	3	317	265	3,412	376
1962-63	..	..	5,107	8	41	28	5,665	265
1963-64	..	..	379	..	..	..	519	79

There has been no outbreak of Anthrax since 1957-58 in which year there were 3 fatal attacks.

66. Veterinary Hospitals

The State Government have opened 16 Veterinary Dispensaries at different Blocks and 60 Veterinary Stockman Centres at different villages in the district. Two more Veterinary Dispensaries at Tarbha and Chudapali and 2 more Veterinary Stockman Centres are also being opened. The Veterinary Hospital is located at the district headquarters and the Veterinary Dispensaries are located at Balangir (Block-II), Mahimunda, Loisinga, Patnagarh, Khaprakhol, Kantabanji, Titilagarh, Saintala, Muribahal, Sonepur, Birmaharajpur, Binka, Dungripali, Ulunda, Deogan and Dudka. There are 14 Veterinary Assistant Surgeons and one Veterinary Technician in the district. The number of patients treated, number of innoculations given and castration done from 1957-58 to 1963-64 are given below:—

Period	No. of Veterinary Hospital and Dispensaries	No. of Veterinary Assistant Surgeon, Technicians	No. of patients treated	No. of innoculations done	No. of castrations
1	2	3	4	5	6
1957-58 ..	7	6-V.A.S.	41,164	74,548	16,889
		1-V.T.			
1958-59 ..	7	6-V.A.S.	31,460	1,92,413	3,070
		1-V.T.			
1959-60 ..	7	6-V.A.S.	32,299	1,90,981	2,901
		1-V.T.			
1960-61 ..	9	8-V.A.S.	2,11,889	1,57,778	40,120
		1-V.T.			
1961-62 ..	12	11-V.A.S.	1,55,743	97,057	24,888
		1-V.T.			
1962-63 ..	16	12-V.A.S.	1,77,813	2,06,953	39,734
		1-V.T.			
1963-64 ..	16	10-V.A.S.	1,95,708	1,06,120	41,412
		1-V.T.			

(C) FISHERIES

67. (*i*)

The main sources of fish supply in the district are tanks and the rivers like Mahanadi, Tel, Suktel and Sonegarh. A number of tanks have been taken over by the Grama Panchayats which supply a good amount of fish. The Grama Panchayats get good profit from pici-culture which constitutes one of their main sources of income.

(ii) Varieties of fish

The main varieties of fish available in the district are *Catla catla* (*Bhakur*), *Labeo Calbasu* (*Kalabynsi*), *Labeo rohita* (*Rohi*), *Cirrhina mirgala* (*Mirikali*), *Cyprinus carpio* (*Bilati Rohi*—an exotic fish).

The above varieties are largely consumed. The following varieties are relished to a lesser extent.

Ophicephalus striatus (*Seula*), *Ophicephalus punctatus* (*Gadisa*), *Aumbas testudinus* (*Kara*), *Clarias batrachas* (*Magur*), *Heteropneustes fossilis* (*Singi*), and *Hilsailisha* (*Illisi*).

The following varieties are also available, but they are not of much food value.

Labeo bata (*DengaPohada*), *Cirrhina reba* (*Pohada*), *Barbus Sarana* (*Serana*) *Barbus Tiets* (*Patia*), *Barbus stigans* (*Putia*), *Chela spp* (*Gada*), *Wallagonia attu* (*Balia*), *Mystus spp* (*Kantia*), *Ambliophervngdon spp*, *Esomus dandricuse*, *Panchax Panchax*, *callichrous spp*, *Pseudotroprius spp*, *Ailia spp*.

(iii) Fishing Implements

The traditional implements for fishing comprise cast nets, drag nets and grill nets of varying sizes locally called *Bhaura Jal*, *Teka Jal Kathi Jal and Tulu Jal* respectively. These are widely used in fishing.

Improved types of implements have been introduced in recent years. Nets made of nylon yarn are being supplied by the Fisheries Department. Nylon made nets haul a greater catch and are more durable than cotton nets.

(iv) Improvement of Pisciculture

For purposes of rearing, fish spawn collected from rivers are stocked n fish ponds known as nursery tanks. Prior to stocking, these nursery tanks are cleared of weed, predatory fishes and predatory acquatic insects either by complete dewatering or by repreated netting. The acquatic insects that still persist in the tanks are killed by applying an emulsion of soap and oil in the proportion of 1 : 3 by weight. In order to ensure the production of zoc-blankers the minute drifting organism in water which serve as food to the growing fry, the nursery tanks are manured with cow-dung at least fifteen days before stocking of spawn. The spawn is reared into fry in the nursery tanks. When they are $\frac{3}{4}$ to 1″ in length they acquire certain features by means of which the culturable species are distinguished. They are then netted out and the fry of unwanted and uneconomic species are removed. Then they are stocked in rearing tanks. They are left to grow there up to 4″ to 5″ in length. When they attain this size they are called fingerlings. The fingerlings are taken out from the rearing tanks and stocked in deep and large fish ponds known as stocking tanks.

There is sufficient scope for pisciculture in the district. A large number of water spread areas are still lying fallow which are being gradually utilised by Grama Panchayats for pisciculture.

The Department of Fisheries has taken several measures for development and extension of pisciculture. Those are below—

(1) Supply of good varieties of fish spawn, fry and fingerlings.

(2) Supply of fry of exotic carps like, *cyprinus carpio* which breed in confined water so that the people may not have to depend on rivers for supply of spawns.

(3) Demonstrating artificial breeding of carps by pituitary hormone injections.

(4) Supply of nylon-made nets to Mahila Samitis for better catch.

(5) Supply of nets , water pumps and fishing staff to the pisciculturists on nominal hire.

(6) Rendering technical assistance to the pisciculturists through District Fishery Officers and Fisheries Extention Officers.

(7) Grant of loans with subsidies to Grama Panchayats for construction of fish farms.

(8) Encouraging fishermen to form co-operative societies.

(9) Supply of yarn to poor fishermen free of cost to make nets.

There are four model fish farms—one in each of the subdivision of the district for demonstration of pisciculture and for supply of fry, fingerling and fish to the people.

There is no well organised laboratory in the district. Equipments have been kept at District Fishereis Office and with Fisheries Extension Officers of each Block for rendering technical assistance to the pisciculturists in the matter of soil and water analysis, identification of fry, spawn and plankton.

(D) FOREST

68. Forestry:

(*i*) Type of Forest

The total area of reserved forests in the district is about 453·32 square miles, and 18·64 square miles of forests are demarcated for further reservation. It covers approximately 16 per cent of the total land area of the district. The forests have been classified into five categories, namely, Sal forests, low mixed forests, alluvial mixed forests, teak forests and bamboo forests. Detailed description of these forests have been given in Chapter I.

(ii) Economic importance

Forest plays an important part in the economy of the district. People depend on it for supply of timber and bamboos for the manufacture of ag icultural and domestic implements and also for fuel. The actual timber requirements of the people consist of *Sal*, *Bija* and miscellaneous species and *Khair*. Other trees such as, *Dhaura*, *Sahaj*, *Arjun*, etc., are also used in the absence of *Sal*. *Sal* poles are preferred for buildings but the poorer classes generally construct their huts with timber of inferior species. *Bija* and *Bandhan* are used for cart-making. Bamboos are in constant demand for basket-making and for fencing purposes. Houses are invariably thatched with thatching grass although straw is used in Balangir and Salebhatta areas where thatching grass is not available. In Titilagarh and Patnagarh subdivisions, the houses are mostly tiled. The manufacture of Bidis from Kendu leaves has received great impetus and these leaves are collected in large quantities for export outside the district.

The requirements of the people in respect of other minor produce are chiefly edible fruits, seeds, thorny shrubs for fencing and Sal leaves for leaf cups and plates. The leading shoots of Sal coppice are in great demand for use as tooth brushes and fibres of *Palas* and *Siali* and other species for ropes.

Greater part of the local supplies of forest produce used to be drawn from outside the reserves but with the increasing population and larger demand for free grants, these village forests are disappearing and so the pressure has now fallen on the reserved forests.

Forests provide good grazing for cattle.

69. Forest Revenue

The outturns of forest-produce from 1957-58 to 1963-64 are given below:—

Period	Timber (in C. Ft.)	Bamboo (in number)	Fuel (in C. Ft.)
1957-58 ..	619,000	896,806	304,000
1958-59 ..	668,000	8,242,492	338,000
1959-60 ..	497,000	8,946,583	904,000
1960-61 ..	576,000	7,958,692	924,000
1961-62 ..	550,500	4,290,000	830,000
1962-63 ..	913,000	5,656,605	839,500
1963-64 ..	696,000	7,441,141	1,507,200

Revenue Outturn

Period	From minor forest produce (Rs.)	From major forest produce (Rs.)	Total revenue (Rs.)
1957-58 ..	16,86,037	7,55,173	24,41,210
1958-59 ..	15,29,340	7,03,063	22,32,403
1959-60 ..	19,25,528	7,73,633	26,99,161
1960-61 ..	4,95,523	8,41,512	13,37,036
1961-62 ..	11,40,604	9,33,663	20,74,267
1962-63 ..	24,05,780	7,54,092	31,59,872
1963-64 ..	22,94,470	10,15,202	33,09,672

70. Employment in Forest Operations

Large number of local labourers find employment in the forest operations. The Kendu leaf contractors alone employ about 40,000 labourers annually in coppice plucking, storing, processing and export operations. The wages earned by these labourers come to about Rs. 11,33,000 a year. M/S. Bengal Paper Mills employ about 3,000 labourers seasonally for cutting, carriage and loading. From this source, the labourers earn per annum an amount of Rs. 2,35,000. The permanent staff maintained by this farm consists of 140 persons.

The Forest Department employs a large number of labourers in road work, plantation, building construction, departmental operations and the like. The forest contractors, perhaps employ the largest number of labourers for operations like felling, logging, loading and transport of which no exact figure is available.

71. Forest Industry

Forest products like Kendu leaf and bamboo are the two principal raw materials to feed the *Bidi* and paper industries respectively. The *Bidi* industry which is solely run by man-power provides employment to large number of persons. Other industries, such as saw mills, furniture workshops etc., are also operating.

72. Major Forest Produce

(*i*) Sleepers

Good-sized *Sal* trees are scarce. So very few sleepers are available for supply to the Railways.

(*ii*) Timber

The major species which passes to outside market in good quantit are *Sal*, *teak*, *Bija*, *Sisoo* and *Haldu*. The soft-wood species, viz., *Mai* (*Odina wodier*) and *Salai* (*Boswellia sewata*) have recently found a market, *Simul* (*Bombax malabaricum*) has a good market but the number of trees available are very few. *Asan* (*Terminalia tomentosa*) logs are exported to South Indian marketslike Visakhapatnam and Rajamahendry. Miscellaneous species like *Dhaura* (*Anogeissus latifolia*), *Sidha* (*lagerstroemia parviflora*), *Kasi* and *Bandhan* (*Ougeinia*) are not exported. The importance of timber is felt much for purposes of construction of houses and bridges, manufacture of furniture and other wood industries. The annual production of timber varies between 500,000 to 900,000 C. Ft. from the reserved forest.

(*iii*) Poles

Poles mostly *Sal*, Teak and *Asan* are used in the district for construction of houses. The demand for poles is heavy. It stands next to firewood. Poles are also used in electrical transmission lines.

iv) Fire Wood

It is consumed locally. A small quantity is exported from Khaprakhol Forest Range to Raipur. The quantity of annual consumption varies between 1,000,000 to 1,500,000 C. Ft.

v) Bamboo

Since 1951, bamboos in some parts of Khaprakhol and Mohakhand Ranges have been leased out to M/S. Bengal Paper Mills Limited. Bamboos from the rest of the Division are consumed locally. On an average, 60,000 bamboos are being supplied at concessional rate to the tenants for their domestic use.

Large number of people earn their livelihood by making bamboo baskets, mats and other things. Use of bamboos in construction of houses particularly in rural areas is found considerable.

73. Minor Forest Produce

(*i*) Kendu leaf

It brings the largest revenue to Balangir Forest Division. The Bidi industry is based entirely on this forest-produce. It is mainly exported to Pakistan and South India. Besides, it provides employment to a large section of people during the plucking season.

(*ii*) Sabai Grass

It had a good market in the paper-making industry. A considerable quantity of this grass used to be exported to Raniganj in the past. But due to its poor yield of pulp, there has been a decrease in its demand. With the establishment of a paper industry at Tiruvilli, it may find a market again.

(*iii*) Khair (Acacia catechu)

It is mainly required for tanning. The whole output now goes to the Government Tannery at Titilagarh.

(*iv*) Lac

In the past, it was being produced by the Government Forest Department. But now its cultivation has been abandoned.

(*v*) Myrabolan

This is a fairly important source of revenue. The market is fluctuating and the prices vary considerably. It is exported to Calcutta, Bombay and Visakhapatnam.

Other forest-produces such as, gum from Sterculia urena, char seeds, Simul cotton, Siali leaves, Mohua flower, horns and hide are also found in the district, though not in large quantities.

74. Rights and Concessions

(*i*) Patna ex-State

The Working Plan and Rule 9 of the Forest Rules of 1928 do not allow any right over the produce of the reserved forests. Certain concessions have only been granted in the 'B' class reserved forests. The tenants paying the Nistar cess are allowed to remove from annual coupes of 'B' class reserved forests, trees of reserved species at one-fourth of royalty and those of unreserved species free of royalty. But these are restricted to their own domestic use within the village. They are not allowed to sell, give away or barter.

So far as the minor forest-produce is concerned, the villagers are allowed to remove fruits and flowers, free of royalty for their domestic use. If the produce possesses any commercial value, the tenant cannot remove them in any large quantity. A certain limit is usually imposed.

In the Khesra forests, the cess-paying tenants are granted some concessions as in the 'B' class reserved forests to remove timber, firewood and other minor forest-produce. The tenants who do not pay cess are allowed to remove firewood free of royalty and timber of reserved and unreserved species by paying one-fourth for the royalty. The ryots are allowed to clear forest for purposes of cultivation with prior permission of the authorities, but they cannot have claim over the trees felled.

(*ii*) Sonepur ex-State

The people have no rights in the reserved forests, except those explicitly granted. Rights include removal of timber, firewood and brushwood at concessional rates from the annual coupes. Grazing is allowed free of charge in the 'B' class forests but subject to existing limitations

In village forests the tenants pay a forest cess or commutation fee of one and half anna per acre of wet land and one anna per acre of At land in order to enjoy the forest rights.

The following Concessions are given to the people :

(1) They can take fuel and fencing materials of unreserved species in reasonable quantities for their own consumption.

(2) Trees up to 4′ in girth are allowed for making plough.

(3) Unreserved species can be removed, with permission of the authorities for house building.

(4) They are allowed to remove minor forest-produces like root, fruits, grass and leaves.

(5) The tenants can graze their cattle free of cess. But they have to pay for each cow one and half anna and for each buffalo two and half anna.

75. Research and Training

The Central Unit working under the Silviculturist, Orissa, undertakes research in Silviculture. There was previously a school at Balangir for training of Forest Guards, but it has been closed since 1957 after the opening of a Central School at Angul.

76. Natural Calamities

The serious droughts of 1899—1900 and 1965-66 are the two great natural calamities which this area experienced in the past. Cobden-Ramsay in "Fendatory States of Orissa" presents a vivid account of famine that occurred during 1899—1900 in the ex-States of Patna and Sonepur. His account is stated below.[1]

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1. L. E. B. Cobden-Ramsay—Feudatory States of Orissa pp. 291—293

(i) Famine of 1900 in Patna ex-State

"The State is liable to famine of which the most disastrous on record is that of 1900. The southern and western areas of the State are especially liable to suffer on any untimely distribution or early cessation of the rains. These tracts are inhabited for the most part by aboriginals, the Khonds to the south in the Kondhan and the Binjhals to the west, in the area known as Binjhalty. These aboriginal races are very indifferent cultivators and make no attempt to secure regular crops by constructing irrigation dams and reservoirs. Even in ordinary years they are extremely indifferent to their cultivation preferring to live very largley on forest products of fruits and roots and the pursuit of the chase. The northern and eastern area of the State is, however, fairly protected from any entire failure of the crops. The people of this part are skilled agriculturists and most of the villages possess dams and tanks for irrigation. The greater degree of protection enjoyed by the north-eastern area was markedly shown in the famine of 1900 when though there was practically a cessation of the rains from August, the people of this part were able by irrigation to harvest 65 per cent crop and the Khonds and Binjhals to the south and south-west only harvested a 30 per cent crop. The great factor is the even distribution of the rainfall: in 1896 the rainfall 54·65 inches was in excess of the average, but there was a prolonged cessation after the sowings with the result that the rice did not germinate properly. In the following year 1897 there was considerable scarcity in the State but no actual famine amongst the people of the State. There was however acute distress in some of the neighbouring States and a large influx of people in search of work invaded the State. Relief works were accordingly opened at the headquarters and private enterprise amongst the rich cultivators provided work for others by embanking fields and improving tanks. The State was, however visited in this year (1897) by a very severe outbreak of cholera, which raged with great virulence, especially amongst the refugees who had fled to the State for employment and subsistence.

"In 1899-1900 the rainfall was 7 inches below the average (the average was 52·18 inches) but would readily have sufficed for the crops, but for its unfavourable distribution. Over 5 inches fell between March and May and was very useful for preparing the lands for the coming rice crop. The rains were favourable to the end of July, when they came practically to a cessation except for a small fall in the early part of August with few scanty falls to the middle of September, when the rains ceased entirely. The crops yielded a 65 per cent harvest i the northern and eastern areas of the State and 30 per cent in the south and west : in the latter areas affairs were partially improved by the fact that the Khonds and Binjhals had reaped good millet crops of Gulji, Mandia and Sawa. By the end of September prices of foodgrains had risen largely and people began to wander over the State in panic, there being no reserve of stocks at command. In the middle of August rice was selling at 24 seers per

rupee, but in September had risen to 20 seers and continued rising steadily to November, for the next three months prices remained stationary, but from February onwards again rose rapidly, reaching in July 5 seers per rupee. The position was rendered the more difficult by the almost entire absence of any reserve stocks. the year 1896-97 had been one of shortage and though the two succeeding years were good the people had sold off their surplus to make good their needs of former years: communications were defective and when the rainy season set in it was almost impossible to import rice except at prohibitive rates: the famine relief kitchens were kept supplied with great difficulty by importing from Kharagpur. A considerable import of *mandia,* however was obtainable from Ganjam and all classes alike were compelled to subsist on this to a great extent. The *mahua* crop, which is of enormous value, especially to the aboriginal races, who form 33 per cent of the population was a failure but the mango crops was fortunately a bumper one. A test work was opened soon after the close of the monsoon, but did not attract workers. It was not till March that people regularly came to the relief works, all of which took the form of tank excavations: the rate paid was a moderate one, Re. 0-3-2 per 100 cubic feet and was raised to Re. 0-4-9 with the rise in prices. Besides State relief works others were opened by private enterprise and much assistance was thus rendered. One of the great difficulties to cope with was rendering relief to the aboriginal races whom nothing would induce to take to regular spade and pick work. Kitchens, seventeen in number, were accordingly opened, the largest number of persons received on any one day at the kitchens being 6,980. The Indian Famine Charitable Relief Fund gave Rs. 10,000 which was expended on providing seed grains, Rs. 6,505 were given as taccavi, Rs. 3,210 land revenue, and Rs. 2,500 forest revenue were suspended and Rs. 21,094 were spent on State kitchens and relief works, excl ding the sums spent by the zamindars and private persons. The next difficulty which faced the State authorities was the greatly restricted area sown in the ensuing year 1901. In March of that year distress again developed in the Kondhan and Binjhalty: accordingly Rs. 8,833 land revenue were suspended, Rs. 14,676 were given as taccavi and kitchens were kept open from April to September in these areas: the taccavi was given on the spot and at the right time and by the year 1902 it was found necessary to remit Rs. 2,398 of land revenue and Rs. 9,000 were again given out on taccavi in the Kondhan and Binjhalty areas: the result was the rapid restoration to normal conditions in these parts. This disastrous famine was attended by a serious outbreak of crime: grain shops were looted and dacoity broke out and it was necessary for Government to depute a Police Inspector to organise the police force of the State. Small pox and cholera raged with terrible virulence during the famine year of 1900: the deteriorated condition of the people rendered them ready victims to these diseases: the registered number of deaths in 1900 was 42,154 against 8,022 in the preceding year, giving an

average ratio of 127 per mile per annum: the birth-rate fell from 15,355 in 1899 to 8,233 in 1900, and the total population showed a decline of 16 per cent. The mortality, amongst cattle was very high from rinderpest and foot and mouth disease: water was scarce and the extensive grazing lands were perched: the greatest mortality however ensued after the break of the rains when the half starved animals were allowed to feed to repletion on the new and abundant vegetation: the Gandas and Doms slaughtered a large number of cattle for food and crime of this type was rife. Measures have now been taken to be properly prepared for famine: schemes of famine works have been decided upon and an expert Surveyor has been engaged to draw up the plans and estimate for immediate use when necessary: several of these are preventive works which will be gradually taken up. The Chief has started a special famine fund as a reserve."

(ii) Famine of 1900 in Sonepur ex-State

The State is liable to scarcity but has rarely suffered from famine. The only famine of which there is record occurred in 1899-1900. The rainfall was very scanty, being only 36·05 inches (the average was 50·53 inches) and was badly disrtributed, the rainfall was insufficient to fill the tanks and in consequence the fields could not be irrigated, 50 per cent of the rice crop on the first class irrigated lands, 70 per cent on second class land, 85 per cent on third class and 30 per cent of the upland rice crop were lost, winter crops failed to germinate owing to want of moisture in the soil. Wheat, however, was sown by about 30 per cent of the cultivators and this crop was of very great assistance. The price of rice stood at 20 seers per rupee at the beginning of 1899 but fell in 1900 to 8½ seers. Relief works were undertaken and kitchens played a prominent part in the relief given, they were opened at all the important centres in the State and the Zamindars also maintained kitchens at their headquarters. 17 kitchens in all were opened, gratuitous elief to respectable poor and taccavi loans to cultivators and weavers were given, the total amount of loans thus given was Rs. 27,628 to r8,239 recepients. Regular employment on works was found for 2,979 persons and the expenditure, including assistance to the dependents of the workers amounted on this account to Rs. 15,322, the number of persons fed at the 17 kitchens was 14,674 at a total cost of Rs. 13,549. The paupers mostly came from members of the Ganda, Gaura, Sahara, Dumal, Kewat and Khadal castes.

(iii) Other years of Drought (Patna ex-State)

This region is more vulnerable to droughts than any other natural calamity. Failure of crops is mainly attributed to insufficient or unevenly distributed rainfall. As a result, scarcity often overtakes the territory. After the famine of 1900, there are records regarding occurrences of drought during the years 1934-35, 1935-36 and 1938-39 in the ex-Patna State.

Drought (1934-35)

The rainfall recorded during the year was 52″—58″ against 80″—92″ in the preceding year. The *Rabi* crops such as Mung, Til, Gram and other cereals suffered much. The outturn of paddy crops was also below expectation.

(v) Drought (1935-36)

The year was bad for agriculture as rainfall was very scanty and untimely. There was practically no rain from January to May as a result of which people could not get opportunity to prepare their paddy field by preliminary ploughing. The monsoon broke towards the later part of June but thereafter there was again a gap with the result that the seedlings could not thrive for want of timely showers and transplantation could not be successfully carried out. The total rainfall though 34″ as against 52″ of the previous year was not evenly distributed. From September onwards there was a complete drought which resulted in the failure of the early and late crops in certain areas where no facilities for irrigation existed. Strenuous efforts were made to irrigate some of the cultivated fields from the village tanks. The paucity of rain ruined the *Rabi* crops. The Durbar administration stopped export of rice and paddy in order to make them available to the people and to keep down their prices. This considerably helped the people to tide over the difficulty caused by the failure of crops.[1]

(vi) Drought (1938-39)

Rains started early in the month of June, but the rainfall was no sufficient as compared to that of the previous year and it was not so well distributed. It was about 44 inches during the year as against about 54 inches during the previous year. As result of that there was partial failure of paddy crops in certain areas of the ex-Patna State and the economic condition of the agricultural classes remained slightly below normal. But this did not affect much the *Rabi* crops or the sugarcane crop which was on the whole satisfactory.[2]

(vii) Drought (1954-55)

In 1954, there was an average monthly fall of 5·85 inches during May—September. Nearly 104,782 acres and 120,200 people were affected by drought involving a loss of about four anna crops.

In 1955, argicultural operations which normally start in June and July were delayed due to late rainfall. Impending signs of drought were, therefore, seen in all the subdivisions of district. The rains continued to be disappointing till the 28th August, after which condition improved due to regular rainfall.

1. *Annual Administration Report of Patna State* of 1935-36, pp. 24.
2. *Annual Administration Report of Patna State* 1938-39, pp. 20-21.

But the early variety of crops were affected to some extent and the outturn was not satisfactory. The late rains however saved the situation in a large measure and the later variety of crops were harvested to some extent. The damage of crops was estimated to be 2 to 3 annas in Titilagarh subdivision and 1 to 2 annas in Sadar and Patnagarh subdivisions The outturn of the paddy crops in Sonepur subdivision however varied between 4 to 8 annas.[1]

(viii) Drought (1965)

In the year 1965 there was inadequate rainfall singularly marked by its erratic and uneven disrtribution. The district was in the grip of a severe drought, the worst in the preceding half century or more There was only 34″ of rain during the year as against the annual average of 56″. Even this little rainfall was so erratic in nature that cultivation could hardly derive any benefit and as a result, towards the end of October 1965, the paddy crop failed leaving behind withered stumps. There had been a continuous process of decay in the forest wealth of the district either by extensive illicit felling or by frequent forest fires, accidental but mostly wilful or due to legal depredation of the forests by the coupe contractors without any simultaneous schemes for afforestation or soil conservation. This loss of forest vegetation also contributed to a decrease in the capacity of the soil to retain moisture.

(*a*) EXTENT OF DAMAGE

The intensity of the calamity can be appreciated from the fact that out of the total of 2, 641 villages in the district extending over an area of 3, 411·6 square miles, 1,498 villages covering 1,858·5 square miles with a population of 425,146 were severely affected by drought. The extent of damage to the principal paddy crops was between 50 per cent and 75 per cent in 741 villages and above 75 per cent in 757 villages. The paddy crop was completely lost in 369,290 acres and partly damaged in 316,150 acres out of the total Kharif area of 1,013,687 acres. Appendices I and II show the subdivisional and blockwise details of damage due to this unprecedented drought. These tables reveal that out of the four subdivisions, Titilagarh and Patnagarh experienced the severity of the situation and the worst affected blocks which caused great anxiety were Bangomunda and Khaprakhol situated in Titilagarh and Patnagarh subdivisions, respectively. The two Community Development Blocks of Binka and Dungripali in Sonepur subdivision which have perennial irrigation facilities from the Hirakud Canal system could escape the damages of the natural calamity. In the district, only 121,503 acres out of a total cultivable area of 1,257,598 acres have irrigation facilities from

1. *Drought in Orissa during 1954 and 1955*—pp. 20.

the Hirakud Canal system as well as from other local sources of irrigation. As a matter of fact, the inadequacy of irrigation facilities prevailing in the district accentuated the severity of drought, which otherwise could have been avoied to a considerable extent.

(b) THE PROBLEM

Failure of crops which was the inevitable consequence of drought shattered the rural economy of the district. The bulk of the population which constituted the landless agricultural labourers was confronted with the ghastly problem of unemployment due to suspension of all sorts of agricultural operations, and there was a steady flow of such population to urban areas and industrial centres like Rourkela and Bhilai in search of employment. A few cases of desertion of children by parents also came to notice. Sale of helpless articles at nominal price became frequent. Gold and silver ornaments were first parted with soon to be followed by sale of live-stock and agicultural implements. Brisk trade in old utensils in local markets was also noticed. The unscrupulous businessmen exploited the starving population as much as they could. A steep fall in the value of land was found and even the best lands locally known as Bahal were parted with by the poor farmers who found it too difficult to maintain their livelihood. The worst sufferers were the landed gentry who because of the drought could not reap a harvest nor could they take to manual labour to which they were never accustomed. They, too, were shy to accept Government relief because of the social status they enjoyed and of a social and even religious stigma attached to free relief which was branded as "Chhatar". Food stuffs completely disappeared from the market mainly because of failure of crops and partly due to the hideous activities of hoarders and smugglers. The pastures lost the greenery and even the hill slopes with thick vegetation presented a bleak and barren outlook. The cattle population, therefore were equally starved. Everywhere there was an acute shortage of water and the rural population had to face the double-edged problem of thirst and hunger. Diseases mainly intestinal, though not in epidemic form, were reported from the worst affected interiors of Titilagarh and Patnagarh subdivisions. All these presented a complex problem necessitating an all out effort to ameliorate the distress.

(c) RELIEF MEASURES

Distress caused by the drought was many-sided and complex. Administration, therefore, had to be geared up to provide relief to the affected population. As a measure of providing employment to the rural population, a net work of labour intensive schemes and Test Relief Projects was taken up even in the remotest corners of the district. A sum of Rs. 63 lakhs was spent on various works which provided employment to the rural population during the period of distress. About 50

per cent of this expenditure was incurred for renovation of derelict tanks and water reserviors, as well as, for excavation of new tanks and wells. While providing employment it met the problem of water scarcity to some extent. Care was taken to ensure that the investment resulted in creation of permanent or semi-permanent assets like tanks and wells which would provide water for drinking and irrigation in the future. Pisciculture could also be encouraged. The district administration was not very much interested in taking up road projects which would vanish in a year or two because of non-maintenance. Yet a sum of Rs. 33 lakhs had to be spent on road works during monsoon months when digging of tanks and wells presented practical difficulties.

On account of hard and rocky soil of the district it was not possible to sink wells in some places. Hence, a sum of Rs. 3 lakhs was placed at the disposal of the Public Health Department for installation of 100 tube-wells in the district. The Department undertook 165 trial borings in 79 villages but all these proved unsuccessful due to rocky bed of hard granite. In the absence of special machine with diamond drill the scheme was abandoned. Yet to meet the immediate need of drinking water 2,598 emporary surface wells were dug in the beds of dried up tanks and Katas at an expenditure of Rs. 1,50,000. These temporary wells proved very useful to human beings as well as to cattle.

As a result of failure of *Kharif* crops due to drought there was a persistent demand for Government assistance in the shape of loan to launch an intensive *Rabi* campaign with a hope to compensate the loss of *Kharif* crops. The cultivators also needed this loan for purchasing agricultural implements and live-stock which they had disposed of earlier for their livelihood . The State Government released a sum of Rs. 98 lakhs as agricultural and land improvement loans which were distributed to about seventy thousand cultivators. Besides, a sum of Rs. 9 lakhs was loaned out through the Co-operative Banking institutions of the district. In response to such liberal sanction of loans the cultivators whole-heartedly adopted a massive *Rabi* campaign and there was intensive Rabi cultivation in 292,270 acres of land in the district. It was gratifying that more than 12 tons of chemical fertilisers were utilised. The success of the *Rabi* campaign greatly ameliorated the distress caused by the failure of *Kharif* crops.

The State Government in consideration of the heavy damage to paddy crops ordered suspension of land revenue in 757 villages involving an amount of Rs.1,51,255 and remission of land revenue in 741 villages involving Rs.1,75,667. There was collection of land revenue only in 1,143 villages involving Rs.5,85,976. Remission of land revenue was sanctioned in respect of lands where the extent of damage exceeded 75 per cent and suspension in respect of lands where the damage was between 50 per cent and 75 per cent.

It was felt extremely urgent to maintain a steady flow of essential commodities to the interiors of the district. Although food production in the district was abnormally low, internal procurement of about 1,939 tonnes of rice could be achieved mainly from the Sonepur subdivision which is partly fed by Hirakud Canals. The State Government also supplied 5,500 tonnes of rice, 6,585 tonnes of wheat and 908 tonnes of Milo from outside the district. The district administration opened 262 fair-price shops in almost every part of the district and located 5 subsidiary main depots, one each at Balangir, Patnagarh, Titilagarh and Sonepur to cater to the needs of interior fair-price shops. Besides, 32 sub-depots were also opened in different centrally located places to make the flow of stock to the fair-price shops easy and uninterrupted. The supply staff of the district in collaboration with the District Agricultural staff succeeded in procuring seed paddy both internally as well as from outside sources for supply at subsidised rates to the needy cultivators who were unable to arrange seeds for their agricultural operations. It was noticed that the purchasing power of the common man in the villages had greatly dwindled and therefore the problem to maintain livelihood became most acute. The condition of helpless widows, destitutes and old and infirm persons became so precarious that the Government had to shoulder the huge responsibility of feeding them by distribution of doles at various places. An allotment of Rs.10,50,000 was received from the Government for gratuitous food supply. There was disinclination among the people to accept cooked food. Even on the brink of starvation, it was curious that the social ego of the people did manifest itself in the most conservative form. The Government was, therefore, obliged to distribute raw rice and wheat in 170 gratuitous relief centres among 71,422 beneficiaries who consisted mostly of orphans, and old and infirm persons who were unable to earn a livelihood and who had none to fall back upon. This programme was gradually wound up after harvest of *Kharif* crop in 1966. Management of these centres presented a gigantic task and personnel from almost all departments of the Government were mobilized to implement the scheme efficiently.

The drought of 1965 had an adverse impact on the educational institutions. Attendance in the schools decreased greatly and students who would devote to studies engaged themselves in manual labour to earn an income, though little, for the family. In the wrost affected areas of Titilagarh and Patnagarh subdivisions most of the Primary schools were on the verge of closing down. The State Government extended liberal aid to educational institutions, as well as, to the students in shape of remission of school fees, free supply of reading and writing materials, garments and mid-day meal for all. This timely assistance kept the schools running in spite of the disastrous conditions prevailing in the district.

With a view to controlling effectively the spread of various types of diseases and epidemics caused due to mal-nutrition and under feeding, preventive, as well as, curative measures were taken up by way of distribution of medicines, baby food, etc., received from Government, as well as, from the Red Cross Organisation from time to time. In the Primary Health Centres and their sub-centres, milk feeding was extended to children and the expectant mothers. To supplement the existing number of Primary Health Centres in the interior 4 temporary medical relief centres were started, one each at Bangomunda, Mahakhand, Lathor and Agalpur which were important from the point of view of vulnerability from diseases due to drought. As a preventive measure to check spread of epidemics, about eight lakhs of persons were given inoculation and vaccination. About twelve thousand water sources were also disinfected to prevent pollution of water in existing tanks and Katas as well as to ensure hygienic water-supply from the renovated tanks and the large number of temporary surface wells.

In 1966, it was indeed a very hard task for the District Administration to shoulder the responsibilities so wide and urgent created by drought without detriment to the normal administrative functions. All the field officers of different departments of the Government had to play an important role in contributing to the amelioration of the drought conditions. There arose therefore the problems of co-ordination, and it was the Collector at the district level and the Subdivisional Officers at the subdivisional level who were made the co-ordinating authority. Extensive financial powers were also delegated to the Collector. A District Drought Relief Committee was set up with all local M. L. As., the Chairman of the Zilla Parishad, the Chairmen of the Panchayat Samitis and other Local Bodies. To supplement the relief operation of Government a number of philanthropic organisations and persons opened free kitchens numbering 55 with a total number of 13,594 beneficiaries. The most important of these organisations were the Bharat Sevak Samaj, Bharat Sevashram Sangha, Orissa Drought Relief Committee and the Indian Red Cross Society which operated 22, 6, 13 and 10 free feeding centres respectively for the poor children, the destitutes and the old and disabled persons. The assistance from some of the foreign countries, as well as, International Organisations like UNICEF and CARE was of immense help to the unfortunate people of the district. About 2,50,000 children, expectant mothers and old and infirm persons got the benefit of milk feeding operated by these organisations. The CARE alone opened 2,066 centres were 116, 824 children and 28, 564 expectant and nursing mothers received their daily share of a glass of hot milk. The UNICEF likewise started 75 milk feeding centres with

6,450 children and 2,040 mothers as beneficiaries. The Red Cross operated 10 free kitchens, and 220 milk feeding centres with 17,699 beneficiaries.

(*d*) POOR HOME

There was heavy influx of destitutes into Balangir town from the neighbouring subdivisions of Patnagarh, Titilagarh, Sonepur, Nawapara and Bargarh. The destitutes were wandering aimlessly in the streets of Balangir town along with the local lepers. Such influx of destitutes became acute in the months of April and May, 1966 Cases of heat stroke and diarrhoea were reported. Any epidemic among them would have spread among the town population. It was decided to send them back to their villages where relief was available and for those who remained at Balangir, a camp was opened with 235 adults and 276 minors in the Government Boys' Middle English School. Food, necessary sanitation, light and drinking water were provided to the inmates. The camp functioned for more than a month and had to be finally closed with the advent of monsoons and the reopening of the school.

Shrimati Indira Gandhi, the Prime Minister of India, also paid a visit to Bangomunda on 14th May, 1966.

She went to the Harijan Colony in Bangomunda which was the most affected area in the district. She evinced a keen interest in the effective functioning of the fair-price shops and adequate supply of drinking water in the drought affected areas. With the timely assistance and allout endeavours of the Government, spontaneous help from the philanthropic persons and voluntary organisations reinforced by the mute endurance and tireless labour of the people. The disquieting situation in the district took a hopeful turn and with the harvest of *Kharif* crops of 1966 the district breathed a sigh of relief.

CARE : Stands for Co-operative for American Relief everywhere

APPENDIX I

Name of Subdivision	Total cultivable area in acres	Kharif area in acres	Damaged 75 per cent or above in acres	Damaged 25 per cent to 75 per cent in acres	Loss of paddy in tonnes
Sadar ..	340,224·75	298,594.54	111,805·86	80,922·93	117,163·77
Patnagarh ..	254,015·45	193,250·30	127,710·69	47,765·73	30,422·30
Titilagarh ..	336,745·07	244,772·00	96,679·00	112,283·72	111,268·20
Sonepur ..	326,592·43	277,071·03	33,091·84	75,177·72	65,605·66
District Total ..	1,257,577·70	1,013,687·87	369,287·39	316,150·10	324,549·93

APPENDIX II

Name of Subdivision	Total No. of Blocks	Name of Block seriously affected	Name of G. P. seriously affected by drought	Population	No. of G. Ps. in Blocks
Titilagarh ..	5	1. Titilagarh	1. Kursud	7,347	9
			2. Marlad	7,182	
			3. Maingan	6,275	
		2. Bangomunda	1. Bangomunda	6,757	9
			2. Belpara	5,645	
			3. Bhalumunda	6,369	
			4. Chulifunka	5,952	
			5. Chandutara	8,926	
			6. Jharial	5,973	
			7. Dedhagan	8,271	
			8. Mundapadar	6,038	
		3. Muribahal	1. Muribahal	6,508	9
			2. Patrapali	5,209	
			3. Goimund	6,670	
			4. Lebda	7,110	
		4. Turekela	1. Turekela	6,223	6
			2. Mahulpati	6,649	
			3. Kuibahal	6,029	
			4. Mahakhand	7,469	
		5. Saintala	1. Tikarpara	8,219	8
			2. Gandpatrapali	6,510	
			3. Saintala	6,048	
			4. Dungripali	6,583	
Total	5	5	23	153,962	41
Patnagarh	3	1. Patnagarh	1. Jogimunda	6,993	10
			2. Tamian	6,026	
			3. Larambha	11,390	
			4. Banaimunda	3,725	
			5. Pandamunda	8,839	
		2. Khaprakhol	1. Maharapadar	3,061	7
			2. Khandamunda	9,780	
			3. Bhanpur	6,187	
			4. Khaprakhol	7,447	
			5. Lathor	11,630	
			6. Luhasingha	8,391	
			7. Telenpali	5,328	
		3. Belpara	1. Belpara	6,068	8
			2. Bhagurli	7,151	
			3. Gambhari	6,273	
			4. Sarmuhan	9,028	
			5. Kapani	5,023	
Total	3	3	25	122,340	25

Name of Subdivision	Total No. of Blocks	Name of Block seriously affeeted	Name of G. P. seriously affected by drought	Popu-lation	No. of G. Ps. in Blocks
Balangir	6	1. Deogan	1. Ramchandrapur	3,517	8
			2. Badabandha	5,843	
			3. Bandparah	8,125	
		2. Agalpur	1. Agalpur	8,499	7
			2. Nagan	6,744	
			3. Bharsuja	5,608	
		3. Tentelkhunti	1. Ghuna	2,788	7
			2. Jamut	3,325	
		4. Balangir-I	1. Kudasinga	6,954	9
			2. Khujenpali	4,147	
			3. Shitala	5,183	
			4· Barapudgia	3,597	
		5. Loisinga	1. Rengali	3,280	8
			2. Dungripali	4,006	
			3. Sargad	6,930	
Total	6	5	15	79,176	39
Sonepur	6	1. Tarbha	1. Kamsara	8,689	6
			2. Singhari	8,545	
			3. Menda	9,492	
			4. Sargaj	5,532	
		2. Birmaharajpur	1. Kenjhariapali	7,542	7
			2. Khandahata	6,680	
			3. Pitamahul	6,885	
			4. Mursundhi	5,602	
		3. Ullunda	1. Kotsamalai	3,719	8
			2. Patrapali	1,617	
			3. Chadaipank	5,365	
Total	6	3	11	69,668	21
District Total	20	16	66	425,146	126

APPENDIX III

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catchment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
1	Karlapita ..	Balangir-I	0·25	R	40	..
2	Madbiapali (Derelict) ..	Do.	4·00	D.W.	.. (600)	..
3	Larakipali ..	Do,	1·50	R	200	20
4	Turura Bahal ..	Do.	0·50	R	70	..
5	Sakma ..	Do.	0·25	R	50	..
6	Sargadpali ..	Do.	0·25	R	45	..
7	Danpur ..	Do.	0·25	R	60	8
8	Khuntapali ..	Do,	1·50	R	40	..
9	Khandapali ..	Do.	0·20	R	25	..
10	Barapudgia ..	Do,	2·50	R	137	..
11	Janakpur ..	Do.	0·25	R	36	..
12	Jhankarpali ..	Do.	1·00	R	80 (207)	.. (100)
13	Kuturla (Derelict) ..	Do.	8·00	R	.. (300)	.. (50)
14	Dabkani ..	Do.	0.25	R	20	..
15	Laxmijore ..	Do.	2·50	D.W.	100 (650)	..
16	Naikenjore ..	Do.	7·60	D.W.	50 (657)	.. (143)
17	Jadamunda ..	Do.	0·50	R	40	..
18	Mankadchuan ..	Do.	0·30	R	55	5
19	Rinbachuan ..	Do	0·25	R	50	..
20	Jiratmal (Derelict) ..	Do.	5·00	D.W.	.. (100)	..
21	Khujenpali (Derelict)	Do.	0·50	R	.. (70)	..
22	Amamunda ..	Do.	0·40	R	50	5
23	Sindurbahal ..	Do.	0·75	R	80 (174)	..
24	Tulandi ..	Do.	0·75	D.W.	36	..
25	Badtelanpali ..	Do.	0·25	R	50	..
26	Gandharel ..	Do.	4·15	R	109 (422)	50 (211)
27	Kalijharan (Derelict) ..	Do.	0·50	R	.. (60)	..

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catch-ment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
28	Maharani Sagar ..	Balangir-I	..	..	..	..
29	Sanaharakalihal ..	Do.	..	..	..	..
30	Pitarada ..	Do.	..	..	..	..
31	Bhilamunda ..	Do.	..	..	..	..
32	Bichupali ..	Balangir-II	1·00	R	130	..
33	Arjunda ..	Do.	0·50	R	59	10
34	Sankarohuji ..	Do.	0·25	R	40	..
35	Puniyalar ..	Do.	0·50	R	129	..
36	Rakshimunda ..	Do.	0·75	R	30	..
37	Beherapali ..	Do.	0·20	R	30	..
38	Kurul ..	Do.	0·25	R	40	..
39	Bheler (Derelict) ..	Do.	4·00	D.W.	250	..
40	Belbahali ..	Do.	0·60	R	60 (125)	..
41	Khamarimunda ..	Do.	0·25	R	40 (50)	..
42	Bileikani ..	Do.	0·25	R	40 (60)	..
43	Umuria ..	Do.	0·25	R	52	..
44	Kandagada ..	Do.	0·20	R	40	..
45	Padibahal ..	Do.	0·50	R	40 (60)	..
46	Sauntapur (Diversion head) (Derelict)	Do.	4·25	D.W.	.. (260)	..
47	Khaliapali ..	Do.	0·25	R	63	..
48	Khaliapali-II (Derelict)	Do.	5·00	D.W.	.. (200)	..
49	Malmunda (Derelict) ..	Do.	7·00	D.W.	.. (333)	..
50	Daspur ..	Do.	0·75	R	40 (60)	..
51	Sambhurkabahal ..	Do.	0·42	R	58	..
52	Pipirda ..	Do.	0·34	R	40	..
35	Chichindapali ..	Do.	0·25	R	20	..

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catchment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
54	Suruda ..	Balangir-II	0·25	R	30	..
55	Bhadrapali ..	Do.	0·35	R	50	..
56	Talkamunda ..	Do.	0·40	R	58	..
57	Kasurpali ..	Do.	0·18	R	41	..
58	Sikabahanga ..	Do.	0·25	R	60	..
59	Kalibana ..	Do.	0·10	R	15	..
60	Atgan ..	Do.	0·25	R	40	..
61	Mohimunda ..	Do.	0·50	R	52	..
62	Bileisarda ..	Do.	0·20	R	34	..
63	Durgapalli ..	Do.	0·30	R	30	..
64	Pudapali ..	Do.	0·50	R	85	..
65	Bibikani —	Do.	—	—	—	—
66	Thelkomunda ..	Do.	0·40	R	58	10
67	Mandiapadar ..	Loisinga	0·25	R	40	..
68	Badibahal ..	Do.	0·50	R	30	..
69	Uperudar ..	Do.	0·40	R	35	..
70	Kentipali ..	Do.	0·25	R	50	..
71	Sujia ..	Do.	0·37	D.W.	50 (1394)	.. (706)
72	Kadalipali ..	Do.	0·50	R	50 (60)	..
73	Chelbahal ..	Do.	0·30	R	40	..
74	Jharamunda ..	Do.	0·40	R	55	..
75	Singarimunda ..	Do.	0·40	R	40	..
76	Sargada ..	Do.	0·40	R	35	..
77	Loisinga Sagar ..	Do.	0·45	R	70	20
78	Agalpali ..	Do.	0·25	R	28	..
79	Bhaliamunda ..	Do.	0·25	R	30	..
80	Kaindapali ..	Do.	0·50	R	25	..

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catchment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
81	Uparkata ..	Loisinga	0·11	R	20	..
82	Negipali ..	Do.	0·25	R	35	..
83	Talpali ..	Deogan	0·30	R	45 (65)	..
84	Khariguda (Designed) ..	Do.	1·25	R	.. (70)	..
85	Dangarapara ..	Do.	..	R	15	..
86	Pandrijore ..	Do.	4·75	D.W.	80 (569)	..
87	Ainlopali ..	Do.	0·42	R	89	10
88	Mursingh ..	Do.	3·00	R	100 (165)	..
89	Arda ..	Do:	0·25	R	50	5
90	Khaksikana ..	Do.	0·75	R	50 (155)	..
91	Khachharapali ..	Do.	0·25	R	55	..
92	Uper Jhar ..	Do.	0·75	R	128	..
93	Sagarpali ..	Do·	0·50	R	60 (90)	.. (20)
94	Jalakani ..	Do.	0·40	R	58	5
95	Banjipali ..	Do·	0·15	R	26	..
96	Kuturla ..	Do.	0·50	R	20	..
97	Khairguda ..	Do.	0·10	R	32	5
98	Arjunpur ..	Do.	0·10	R	15	..
99	Dhandamal ..	Do.	0·50	R	64	..
100	Tentulikhunti ..	Tentulikhunti	1·00	R	129	..
101	Samara ..	Do.	0·75	R	92	..
102	Danpur (Derelict) ..	Do.	0·25	R	.. (60)	..
103	Dangara ..	Do.	0·15	R	17	..
104	Kharada ..	Do.	0·2	R	40	..
105	Rainbhata ..	Do.	0·05	D.W.	58	..
106	Salebhata-I (Derelict) ..	Agalpur ..	0·50	R	.. (70)	..
107	Salebhata-II(Designed) ..	Do.	2·00	D.W.	.. (180)	..

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catchment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
108	Dungripali ..	Agalpur	0.50	R	70 (90)	..
109	Chingadadar ..	Do.	0·50	R	21	..
110	Magarmunda ..	Do.	0·30	R	27	..
111	Bhaludhar ..	Patnagarh ..	4·00	R	80 (750)	20(80)
112	Kadalimunda (Derelict)	Do.	4·00	R	.. (300)	..
113	Bhainsa (Designed) ..	Do·	4·00	R	.. (523)	.. (50)
114	Kerlakata ..	Do.	2·60	R	100 (525)	60 (100)
115	Ulba ..	Do.	0·15	R	25	..
116	Kendumundi ..	Do.	0·30	R	15	..
117	Beherabandha ..	Do.	0·10	R	23	..
118	Mudghat ..	Do.	0·50	R	50	10
119	Chitadungri ..	Do.	0·30	R	36	10
120	Dhodmahul ..	Do.	0·75	R	48	5
121	Phulmunda ..	Do.	0·5	R	55	10
122	Ganjaudar ..	Do.	0·5	R	50	5
123	Ainlatunga ..	Do.	0·75	R	56	5
124	Khairmunda ..	Do.	0·25	R	30	..
125	Khuntasamali ..	Do.	0·25	R	20	..
126	Tendapadar ..	Do.	0·50	R	50	5
127	Beheramunda ..	Do.	0·30	R	30	..
128	Badajhankarpali I ..	Do.	0·10	R	10	..
129	Jalapali ..	Do·	0·05	R	10	..
130	Bijamagur ..	Do.	0·50	R	40	..
131	Samaliswar ..	Do.	0·10	R	20	..
132	Dhatuk ..	Do.	0·20	R	20	..
183	Badajhula ..	Do .	0·25	R	30	..
134	Siltepara ..	Do.	0·15	R	30	..

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catch-ment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
135	Chuladhar ..	Patnagarh	0·50	R	50	..
136	Pudapadar ..	Do.	0·15	R	20	..
137	Barakata ..	Do.	2·00	R	70	..
138	Nehnabandha ..	Do·	0·50	R	45	..
139	Dhandamunda ..	Khaprakhol	0·60	R	111 (120)	..
140	Sareibahal ..	Do.	0·50	R	32	..
141	Badagurujibhata (Derelict)	Do·	0·70	R	.. (140)	.. (20)
142	Bagajharam ..	Do.	6·00	D.W.	60	..
143	Pingalamunda (Derelict)	Do.	2·00	R	.. (150)	..
144	Gudrupali ..	Do.	0·50	R	25	..
145	Tangarapadar ..	Do.	0·50	R	53	10
146	Juria ..	Do.	0·50	R	19	..
147	Golamunda ..	Do.	1·00	R	24	..
148	Kutali (Designed) ..	Titilagarh	0·25	R	.. (60)	..
149	Malijhara ..	Do·	0·06	R	10	..
150	Malisira ..	Do.	0 20	R	30	..
151	Jamapada ..	Do.	0·75	R	40 (120)	..
152	Jagua ..	Do.	0·63	R	128	30
153	Desil ..	Do.	0·25	R	20	..
154	Banjihal ..	Do.	0·42	R	25	..
155	Nimainbandha ..	Do.	0·25	R	58	..
156	Kalakut ..	Do.	0·25	R	62	..
157	Makripada ..	Do.	0·35	R	60	..
158	Pipalpadar ..	Do·	0·50	R	80	..
159	Tentulikhunti ..	Do.	0·25	R	60	..
160	Mahada ..	Do.	0·15	R	70	..

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catch-ment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
161	Bhursaguda ..	Titilagarh	0·10	R	30	..
162	Bhaligan ..	Do.	..	..	..	..
163	Silenda ..	Do.	..	..	..	..
164	Nirizibahal ..	Do.	..	..	..	..
165	Chuliphunka ..	Bangomunda	0.45	R	91 (130)	..
166	Bangamunda II(Derelict)	Do.	2·25	R	.. (400)	.. (50)
167	Arsatula ..	Do.	0·14	R	40	5
168	Saradapur ..	Do.	0·50	R	47	10
169	Chantia ..	Do.	0·17	R	20	..
170	Bongamunda I ..	Do.	3·00	R	33	..
171	Cansil ..	Do.	0·10	R	30	..
172	Ghagarli (Derelict) ..	Do.	3·00	R	.. (400)	.. (50)
173	Kadalimunda ..	Do.	0·20	R	30	..
174	Kapani ..	Do.	0·50	R	30 (100)	.. (40)
175	Balikhamar ..	Do.	..	..	..	..
176	Surbahal ..	Do.	..	..	..	..
177	Salandi ..	Do.	0·30	R	43	..
178	Ghunsar ..	Saintala ..	0·20	R	40	..
179	Deng ..	Do.	0·20	R	55	..
180	Phapsi ..	Do.	0·75	R	90 (190)	50
181	Kareldhua ..	Do.	0·95	R	127 (137)	40 (50)
182	Gandapatrapali ..	Do.	0·02	R	13	..
183	Kuargan ..	Do. ..	0·10	R	50	5
184	Sinkhaman ..	Do.	0·12	R	19	..
185	Bijipur ..	Do.	0·10	R	20	..
186	Davjuri ..	Do.	0·50	R	60	..
187	Ekagudi ..	Do.	0·15	R	35	..

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catch-ment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
188	Siskela ..	Saintala ..	0·08	R	50	..
189	Dharapagar ..	Do.	3·00	R	80 (200)	20 (30)
190	Biripali ..	Tureikela ..	0·01	R	..	..
191	Kusupali ..	Do.	0·50	R	110	..
192	Gudighat ..	Muribahal	1·00	R	185	50
193	Dangarpada (Designed)	Do.	3·00	R	.. (571)	.. (300)
194	Tanjore ..	Do.	14·00	D.W	100 (1296)	.. (604)
195	Bandupala ..	Do.	1·58	R	180	70
196	Inchapara ..	Do.	2·00	R	27 (200)	.. (60)
197	Kharada ..	Do.	0·10	R	23	..
198	Chanabahal ..	Do.	0·25	R	19	..
199	Tanara ..	Do.	0·25	R	36	..
200	Hadharan ..	Do.	0·12	R	40	..
201	Anjharan ..	Do.	0·10	R	30	..
202	Dangarpada I ..	Do.	0·15	R	30	..
203	Pudisira ..	Do.	0·15	R	60	..
204	Janmura ..	Sonepur ..	0·12	R	20	..
205	Khar Jhura ..	Do.	0·50	R	60 (105)	10 (20)
206	Khair Tikira ..	Do·	0·25	R	30	..
207	Bis Munda ..	Do.	0·10	R	41	..
208	Mallik Munda ..	Do.	0·10	R	15	..
209	Ainlapali ..	Do.	0·15	R	52	10
210	Godia ..	Do.	0·25	R	40	5
211	Balpur ..	Do.	0·10	R	20	..
212	Dahlong ..	Do. ..	0·45	R	60 (120)	10 (30)
213	Nandanmal ..	Do.	2·50	R	80	20
214	Narayanpur ..	Do.	0·10	R	40	..

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catchment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
215	Uper Phapsi ..	Sonepur	0·30	R	20	..
216	Hardakata ..	Do.	0·18	R	46	5
217	Pipilipali ..	Do.	0·10	R	16	..
218	Badajhinki ..	Do.	0·25	R	30	..
219	Naikenpali ..	Do.	0·15	R	30	..
220	Sargunamunda ..	Do.	0·12	R	20	..
221	Karlakhaman ..	Do.	0·37	R	75	10
222	Khari ..	Do.	0·38	R	49	..
223	Govindpur ..	Do.	0·25	R	60	..
224	Debpali ..	Do.	0·50	R	69	..
225	Lupursinga ..	Do.	0·25	R	78	..
226	Mayurdan ..	Do.	0·18	R	69	..
227	Mohansagar ..	Do.	1·45	R	62 (225)	30
228	Attasingha ..	Do.	0·10	R	20	..
229	Rengsa ..	Tarbha ..	1·00	R	103	..
230	Bhandhakhola (Designed)	Do.	1·37	R	.. (100)	.. (30)
231	Jharbandha ..	Do.	0·25	R	30	..
232	Khuntabandha ..	Do.	0·10	R	20	..
233	Singhari ..	Do.	0·15	R	57	10
234	Charbhata ..	Do.	2·00	R	30 (150)	..
235	Kandhapali (Derelict) ..	Do.	3·00	R	.. (170)	..
236	Sibtala ..	Do.	0·15	R	30	..
237	Khagsikana ..	Do.	0·20	R	30 (60)	..
238	Menda ..	Do.	0·15	R	40 (50)	..
239	Antarada ..	Do.	0·20	R	20	..
240	Sargaj ..	Do.	0·15	R	41	5
241	Chandanpali ..	Do. ..	0·10	R	41	5

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catchment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
242	Baghia ..	Tarbha	0·25	R	40	..
243	Arda ..	Do.	0·10	R	34	..
244	Taraikela ..	Do.	0·25	R	20	..
245	Naktikana	Do.	0·15	R	50	10
246	Badbairo ..	Do.	0·25	R	40	..
247	Tarbha ..	Do.	0·12	R	20	..
248	Kamsara ..	Do.	0·15	R	55	..
249	Dahima ..	Do.	0·74	R	74	..
250	Chadhaipank (Designed) ..	Ulunda	0·75	R	.. (65)	..
251	Bhudhiapali ..	Do.	0·15	R	40 (60)	10
252	Mendlimunda (Derelict) ..	Do.	2·00	R	.. (200)	.. (50)
253	Pankital (Designed) ..	Do.	0·25	R	.. (61)	..
254	Tentelkhol (Derelict) ..	Do.	0·25	R	.. (60)	..
255	Lastala ..	Do.	1·50	R	80 (120)	10 (30)
256	Sindiribahal ..	Do.	1·05	R	40 (90)	..
257	Bodhan (Derelict) ..	Do.	1·00	R	.. (100)	..
258	Nakdin ..	Do.	2·00	R	40 (800)	.. (30)
259	Sindhol ..	Do.	0·25	R	20	..
260	Kapasira ..	Do.	0·12	R	51	5
261	Bhajabahalpur ..	Do.	0·12	R	21	..
262	Sahanidhia ..	Do.	0·50	R	48	5 ..
263	Ghikudi ..	Do.	0·15	R	35	..
264	Daldaba ..	Do.	0·05	R	15	..
265	Karapura ..	Do.	0·12	R	25	..
266	Badpur (Derelict) ..	Birmaharajpur.	1·00	R	.. (80)	..
267	Benramal (Derelict) ..	Do.	1·09	R	.. (95)	.. (10)
268	Hilung	Do.	0·12	R	40	5

Sl. No.	Name of the Minor Irrigation Project	Name of the Block	Catchment in square miles	Type	Ayacut irrigated in acres	
					Kharif	Rabi
1	2	3	4	5	6	7
269	Gaudagada (Designed) ..	Birmaharajpur.	0·25	R	.. (90)	.. (15)
270	Govindpur ..	Do.	0·25	R	20	..
271	Mahipali (Designed) ..	Do.	0·50	R	.. (80)	..
272	Jatasingha ..	Do.	0·15	R	25	..
273	Duleswar ..	Do.	0·12	R	33	..
274	Achanda ..	Do.	0·25	R	40	..
275	Mendamal ..	Do.	0·12	R	40	10
276	Khandahata ..	Do.	0·20	R	30	..
277	Kumarkei ..	Do.	0·15	R	20	..
278	Champamal ..	Do.	0·25	R	40 (60)	10
279	Kenjiriapali ..	Do.	0·30	R	28	..
280	Gourkela ..	Do.	0·50	R	65	..
281	Mudeitimunda ..	Do.	..	..	..	..
282	Rajpali ..	Binka	..	..	..	..
283	Bhimtikira ..	Do.	..	..	..	..
284	Charada ..	Do.	..	..	..	..
285	Suladi ..	Do.	..	..	..	..
286	Origan ..	Do.	..	..	..	..
287	Sukha-I ..	Do.	..	..	..	..
288	Sukha-II ..	Dungripali	..	..	..	..
289	Sahada ..	Do.	..	..	..	..
290	Badakolleby ..	Do.	..	..	..	..
291	Susamal ..	Do.	..	..	..	..
292	Rampur ..	Do.	..	..	..	..

N. B.:—The figures in bracket indicate the area to be brought under irrigation after improvement of the project.

R.—Reservoir.

D.W.—Diversion Weir.

APPENDIX IV

Area under various crops of Balangir District

Name of the crop	Area in acres
(1)	(2)
Winter Rice ..	669,000
Autumn Rice ..	33,000
Summer Rice ..	9,355
Wheat ..	4,675
Ragi ..	11,187
Jowar ..	730
Bajra ..	91
Maize ..	6,964
Small Millets ..	44,650
Total other cereals ..	49,932
Mustard ..	15,704
Niger ..	417
Sunflower ..	815
Castor ..	5,304
Til ..	31,900
Groundnut ..	18,477
Linseed ..	2,854
Jute ..	157
Cotton ..	289
Mesta ..	5,949
Sun-hemp ..	8,233
Sugar-cane ..	9,823
Tabacoo ..	4,155

Name of the crop		Area in acres
(1)		(2)
Dry chillies	..	7,417
Turmeric	..	15
Potato	..	526
Cabbage	..	1,877
Cauliflower	..	2,324
Brinjal	..	7,422
Bhendi	..	2,472
Sweet Potato	..	13,755
Saru	..	1,541
Onion and Garlic	..	6,332
Other vegetables	..	16,336
Mango	..	5,030
Citres fruits	..	108
Bananas	..	676
Papayas	..	12
Cashewnut	..	70
Other fresh fruits	..	381
Grams	..	13,548
Tur, Arhar	..	6,345
Mung (Kharif and Rabi)	..	41,505
Biri	..	40,845
Pea	..	7,210
Cow pea	..	250
Kulthi	..	25,493
Khesari	..	63,277

APPENDIX V

Area under different crop—(in acres)

	Rice	Wheat	Maize	Ragi	Sugar-cane	Ground-nut	Cotton	Jute	Tobacco	Gram	Pulses	Linseed	Castor	Til	Mustard
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1652-53	.. 433,653	508	..	..	4,078	1,523	1,006	2,077	434	..	..	..	..	..	..
1953-54	.. 471,897	1,160	..	..	3,590	6,168	650	2,055	453	..	..	..	..	..	..
1954-55	.. 630,090	1,233	..	..	1,209	1,478	661	2,255	338	..	..	..	..	..	..
1955-56	.. 666,130	1,805	2,200	12,400	5,400	1,942	1,134	4,480	857	9,800	154,300	..	4,000	67,600	5,300
1956-57	.. 761,563	1,975	2,200	11,300	5,930	1,944	1,129	255	562	9,800	154,300	..	..	66,900	8,900
1957-58	.. 761,576	1,960	2,200	11,300	5,380	1,938	1,135	2,007	822	9,800	162,300	8,600	3,900	67,400	5,900
1958-59	.. 761,901	1,985	2,290	12,300	5,495	1,958	1,144	255	392	8,900	192,100	8,600	4,000	67,400	5,600
1959-60	.. 751,000	2,321	..	..	5,555	2,712	1,158	4,049	902	..	..	..	..	..	..
1960-61	.. 644,000	..	..	..	..	...	..	..	..	..	..	..	..	..	..
1961-62	.. 571,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..
1962-63	.. 722,000	2,676	2,908	..	6,942	14,176	230	96	..	..	..	..	..	..	..
1963-64	.. 681,000	4,987	..	..	11,352	174,33	254	147	..	..	..	..	..	..	..
1964-65	.. 702,000	5,247	7,357	11,318	10,218	17,926	290	160	..	11,406	165,801	2,100	5,906	58,928	18,229
1965-66	.. 702,000	4,675	6,964	11,187	9,754	18,477	289	157	4,055	13,548	187,497	2,854	5,304	31,900	15,704