

CHAPTER IV. AGRICULTURE AND IRRIGATION.

The present district of Dhanbad which was a sub-district since 1921, has been given the status of an independent district from 1st November, 1956. The two police *thanas* of Chas and Chandankeari which formerly belonged to the Sad -an subdivision of the old district of Manbhum have been added to the district of Dhanbad. According to the census of 1961 the district including Chas and Chandankeari has an area of 1,114 square miles with a population of 1,158,610 souls as against the population of 905,783 in 1951 census (adjusted figure after re-organization of Bihar). Dhanbad is the smallest in Bihar so far as area and population are concerned.

The district of Dhanbad is the only district unit where the non-agricultural population outnumber the agricultural population. Roughly 51 per cent of the total population derive their livelihood according to 1951 census from the non-agricultural occupations, but one part of the district varies widely from another part.* In the central zone consisting of Jharia, Kenduadih, Dhanbad, Jorapokhar, Jogta, Sindri, Katras and Chirkunda police-station, non-agricultural occupations account for about 82 per cent of the population whereas in the remaining police-stations of Govindpur, Baliapur, Topchanchi, Baghmara, Tundi, Nirsa, Chas and Chandankeari, 84 per cent depend on agricultural pursuits. The Tundi revenue Thana is a purely agricultural tract where 98.2 per cent of the people are agriculturists. On the other hand 99.4 per cent of the population of Jharia police-station are employed on non-agricultural occupations. The population of the district associated with agriculture is 48.2 per cent only [District Census Hand -book (1951), Dhanbad PP. 8-9].

LAND RECLAMATION AND UTILISATION.

Dhanbad has an area of 7,10,119.00 acres only out of which 97,345.00 acres of land are cultural waste lands.+ In order to reclaim cultural waste lands, The Bihar Waste Land Reclamation Cultivation and Improvement Act was passed in 1946. The Waste Land Reclamation Section is under the Revenue Department. There is a Waste Land Reclamation Office for the district whose headquarters is located at Dhanbad. It is under the administrative control of the Deputy Commissioner, Dhanbad.

Manual reclamation of waste land is encouraged by the distribution of Land Improvement Loans. This office maintains the figure of acres reclaimed under Land Improvement Loans.

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The following statement has been given by the Waste Land Reclamation Section for the area reclaimed with the help of L.I. loans. On enquiry it was found that there has been no appraisal at the spot if the reclaimed area is under crops.

Years.	Area reclaimed. Acres.	Amount advanced. Rs
1956-57	142.79	12,745.00
1957-58	302.22	35,140.00
1958-59	445.60	33,221.00
1959-60	290.62	24,000.00
1960-61	288.31	28,000.00
1961-62	145.05	7,500.00

According to the Revenue Department, Waste Land Reclamation Section, Patna Circular no.4969-W.L.R., dated 15th November 1961, Government have decided to give the grant of subsidy to the cultivators for conversion of waste lands into paddy fields in the laterite tract to encourage the reclamation of waste land into paddy field.

The following statement has been supplied by Waste Land Reclamation Department, Dhanbad for this type of reclamation through subsidy:-

Years.	Area reclaimed. Acres.	Amount spent. Rs.
1956-57	50.87	15,087.00
1957-58	47.32	10,000.00
1958-59	100.00	10,000.00
1959-60	100.00	10,000.00
1960-61	56.72	3,991.00
1961-62	13.73	1,373.00

Here also an investigation on disclosed that no spot enquiry has been made later to find out of the reclaimed area has borne any crops.

The following statement supplied by Waste Land Reclamation Department, Dhanbad will show the progress of reclamation done departmentally from 1959-60 to 1961-62:

Years.	Area reclaimed. Acres.	Amount spent. Rs.
1959-60	94.90	6,500.00
1960-61	200.55	9,999.59
1961-62	94.70	7,000.00

This district has reclaimed 209.89 acres of Government khas land till 1961-62. Out of this 102.86 acres have been settled with Harijans and Adivasis and landless men as per Government instructions. There is always the danger of the reclaimed area relapsing into waste again.

IRRIGATION.

The rivers and streams of the district are hilly in character and cannot be used for irrigation unless the water is stored. The

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other sources of water-supply are springs, tanks, wells, natural water reservoirs in depressions and *ahars* (artificial reservoirs).

The main source of water is rainfall. The normal rainfall of the district is 55 Rainfall is not a dependable source of water and irrigation facilities are essential .

The system of artificial irrigation prevalent in the district consists of two main types, viz., Medium Irrigation schemes and Minor Irrigation schemes.

A statement of rainfall has been supplied by the Agriculture Department .The total amount of rainfall has been mentioned in inches against the year showing the amount of rainfall from 1946 to 1955. It is as follows:-

Year.	Annual rainfall.
1946	56.89
1947	38.62
1948	51.62
1949	50.40
1950	52.06
1951	42.02
1952	47.27
1953	84.97
1954	49.30
1955	40.26

In 1948 there were 95 rainy days as against 78,76,68,93,101,78 and 98 days respectively in the years from 1949 to 1955 respectively. Most of the rainfall is in the months of July, August and September in all these years .1947 was a drought year when there was a total rainfall of 38.62" only.

During the year 1956 there was a total rainfall of 47.96" as against 32.14" and 57.81" in 1957 and 1958 respectively. The rainfall figures for 1959 were not available in Agriculture Office. The following statement of rainfall in m. m. for 1960 and 1961 has been obtained from the same office. Here also the wet months are July and September.

	1960 in m.m.*	1961 in m.m.
January	0.8	11.1
February	Nil	14.7
March	37.2	0.7
April	Nil	3.1
May	39.1	48.8
June	68.6	215.0
July	328.9	244.9
August	408.2	331.1
September	317.5	251.8
October	74.3	200.8
November	3.7	0.4
December	Nil	0.2

* m.m = millimetre.

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A number of Medium Irrigation schemes have been taken up and executed from time to time to ensure a regular source of water-supply. The schemes are intended more to supply assured irrigation to paddy crop during the intervening drought periods in the *kharif* season. Less is expected from them for irrigating *rabi crops*. Medium schemes normally cost above rupees five thousand and are capable of irrigating more than 100 acres of land. More or less they depend on the rainfall and have generally a catchments area in the mountainous uptracts of various *nallahs* and rivulets.

During the First Five-year Plan period, two Medium Irrigation schemes were taken up and completed at a cost of about Rs.1,22,213 benefiting 697 acres of land in district. During the second Five-Year Plan period, 14 schemes costing about Rs. 1,94,919 were taken up and completed. They irrigate about 2,161 acres of land in the district. During the Third Five-Year Plan period six schemes are already under execution. These schemes are likely to cost 1,00,000 rupees and to irrigate 1,500 acres of land.

A detailed list of Medium Irrigation schemes already executed and also under execution from 1950 to 1960 is appended herewith.

Medium Irrigation schemes already executed.

Name of scheme	Location	cost in rupees.	Area expected to be benefited in acres.
Sindhambad Irrigation scheme (re-P.S.Topchanch pair of old bundhs).		9,857.00	150
Udaipur Irrigation scheme (repair Nirsa .. of old bundhs).	..	33,449.00	300
Sirpuria Irrigation scheme (repair .P.S. Nirsa of old bundhs).	Nirsa	8,731.00	133
Khesmi Irrigation scheme (repair Topchanchi p.S. of old bundhs).		25,629.00	390
Madaidih Irrigation scheme (repair Topchanchi P.S. of old bundhs).		8,030.75	186
Phulwar Irrigation scheme (repair Katras .. of old bundhs).	..	7,158.00	110
Baliapur Irrigation scheme (repair Baliapur .. of old bundhs).	..	11,246.37	200
Madaidih Irrigation scheme Topchanchi .. (repair of old bundhs).	..	5,113.00	175
Luadih Irrigation scheme (repair Nirsa .. of old bundhs).	..	12,543.00	250
Katoria Irrigation scheme (repair Tundi .. of old bundhs).	..	8,550.37	200

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Name of scheme	Location.	cost in Rupees.	Area expected to be benefited in acres.
Dudhinala Irrigation Scheme (cons- Katras .. struction of bundh).		20,025.00	250
Konartanr Irrigation Scheme (cons- Baliapur .. struction of bundh).		18,800.00	250
Telmacha Irrigation Scheme (cons- Baghmara .. struction of bundh).		8,661.62	250
Panjama Irrigation Scheme (cons- Govindpur.. struction of bundh).		22,729.37	500
Rajbanspahar Irrigation Scheme Katras .. struction of bundh).		16,069.60	263
Karampara Irrigation Scheme (cons- Katras .. struction of bundh).		9,931.30	225
	Total	2,33,799.38	3,832

There has been no follow up survey by any department how far the schemes have been successful.

Minor schemes.

The topography of the district and the economic resources of the population underline the need for Minor Irrigation schemes which are cheaper and of more local importance. As a matter of fact, the Minor Irrigation schemes have sustained the agricultural economy of the district

Minor Irrigation schemes include *bundhs*, tanks and *ahars*, as well as repairs to old Minor Irrigation works. These Minor Irrigation works are carried out by three agencies, one under the Revenue Department which undertook 1,376 schemes at a total cost of Rs.23,50,191.94 the second by Agriculture Department which undertook 360 schemes at a total cost of Rs.2,00,600 and by the Community Development Department for which figures are not available. Now these works will be carried out by the United Agency for Minor Irrigation. This agency was created in Government Order no. IDS-0169/59-Agri-30380, dated the 23rd December, 1959/2nd January 1960. An Additional Director of Agriculture (Engineering) had been appointed to be in charge of this agency. But under letter no 206-Agriculture, dated 20th January 1962, subsequently the post of Additional Director of Agriculture was upgraded to Chief Engineer (Irrigation). He will be responsible for all Minor and Medium schemes costing up to Rs.1 Lakh throughout the State irrespective of budget heads from which these schemes are financed. The scheme will include the following:-

(1) Medium *ahars*, *Pynes*, *bundhs*, etc., costing between Rs. 10,000 to Rs. 1 Lakh.

(2) Minor *ahars*, *Pynes*, *bundhs*, etc., costing up to Rs. 10,000.

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- (3) Installation of private tube-wells.
- (4) Open borings with and without strainers.
- (5) Surface percolation wells.
- (6) Distribution of rahat pumps.

The following statement shows the construction of wells, minor *ahars*, *pynes* and *bundhs* in the district:-

- (1) Minor *ahars*, *pynes* and *bundhs*-226.
- (2) Medium Irrigation-16.
- (3) Wells-525.

Besides, 13 *rahat* pumps and 35 pumping sets were distributed in the district in the Second Five-Year Plan.

SOILS.

The soil of this district is infertile laterite of no great depth having a general tendency towards continual deterioration, the process being continued till the underlying heavier gravel is exposed. The climatic condition prevailing in the district is of a fairly copious rainfall and high temperature which lead to the formation of lateritic type of soil of the district. Iron, aluminium and manganese oxides are removed less rapidly than the other bases.

According to the texture of the soil, the soils of this district may be classified broadly in four classes:-

- (i) ***Stony and gravelly***.- These soils are found near the foot of hillocks which have a large admixture of large fragments of stones, gravels, pebbles, etc. This type of soil may be classed as low grade soil.
- (ii) ***Sandy soils***.- These soil is locally known as bali. In the district this type of soil is found near river and stream beds. Soil contain – ing more than 60 per cent of sand are classified and are easily drained as they let the water through too readily and necessitates frequent watering. These soils are poor in respect of plant food and require heavy manuring and in frequent doses. On account of dearth of water and manure sandy soils are described as hungry soils. Cattle manure and compost, green manuring and the addition of tank silt and clay will bring about great improvement in the retentive capacity of these soils. The soils are used for growing cucurbits.
- (iii) ***Loamy soils***.- This type of soil is found near the hills and formed by rain washing from higher positions and consists of detritus of decomposed rocks and vegetable matter. Soils whose sandy components are between 30

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and 60 per cent are classed as loamy soils.

Agriculturally these soils are best adapted for cultivation. They are suited to every kind of crop but in district this soil is put under paddy, sugarcane, *marua*, wheat, gram *khesari*, etc.

- (iv) **Clayey soil.**- such soils are found near tank beds. When moist they are sticky and ploughing and other tillage in that condition will reduce them into a pasty mass. When they are dry they become very hard and difficult to break. They are difficult to drain, as the water cannot pass through easily on account of fineness of the particles composing them. They have a high water-holding capacity and are very fertile in respect of plant food contents. The addition of sand, lime, coarse bulky organic manures will improve their physical condition. Nitrogen applied as organic matter and that in the shape of ammonia free or combined as in the ammonium salts applied as manure becomes fixed in the soil, i.e., they do not pass out of the soil in drainage waters.

Paddy is the main crop. The soils for rice cultivation of the district have been differentiated by the cultivator on the basis of their positions into three classes, viz., *baad*, *kanali* and *bahal*.

Baad land.- These lands constitute an area of 0.9 lakh acres (cultivable). These are uplands made high terraces and dependent entirely on the rainfall much of which percolates rapidly to the lower fields. These lands are sown with early paddy. The soil is poor and need addition of organic manures and fertilisers for better production.

Kanali land.- The area cultivable in the district under this classified land is 0.50 lac acres. These lands are situated *baad* and *bahal* land. The soil is loamy and medium paddy is grown. For obtaining a good yield organic manures and fertilisers should be added.

Bahal land.- These are the best type of land for growing paddy. They are low lying and they receive enough water through percolation and it is retained. The soil is fertile and rich in plant food. For better production, use of fertilisers and manures are added.

Sometimes high lands situated over *baad* lands are called by cultivators as *tanr* lands. They are fit for *gora*, paddy, *marua* and groundnut, etc. These lands are subjected to soil erosion. Bounding properly and checks for soil erosion are necessary for these lands.

Land adjoining to homesteads is known as *ari* land. These lands are best suited for vegetables.

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The following statement shows the average yield of the crop per acre of different types of soil:-

Types of land.	crop.	Average yield per cent in mds.
1. Bahal land	Paddy ..	25
	Khesari	5
	Gram	5
2. Kanali land	Paddy ..	15
	Gram ..	8
	Khesari ..	4
	Wheat ..	10
3. Baad land	Paddy ..	12
	Marua ..	7
4. Tanr land	Maize ..	8
	Millets ..	6
	Rahar ..	6
	Oil-seeds..	5

Soil Erosion.

The cause of soil erosion in this district may be enumerated as given below:-

- (a) **Rainfall.**- The area is a rainfed, the total average rainfall being 55". The intensity of precipitation is concentrated in a short period and in a short time.
- (b) **Running water.**- Due to steep slopes and high intensity of precipitation the run-off water runs at a speed which removes the soil.
- (c) **Slopes.**- The slopes of the land of the district are quite prominent.
- (d) **Nature of the soil.**- Once the run-off water makes the path in the lateritic type of soil it proceeds rapidly and assumes serious proportions till gullies reach the bed rock.
- (e) **Ploughing.**- Deep ploughing is not possible due to rocky construction of the soil and as such moisture is not retained in the sub-soil but are allowed to drain. The cultivators practise ploughing along the slope on tanr land which induces and accelerates soil erosion.
- (f) **Lack of contour-bunding,** which leads to a quick run-off of the rainwater causing erosion.

Hardly any steps for constructing soil erosion have been taken by the cultivators. In a district like this step are expensive. A few plots here and there have been bounded and leveled but no planned large-scale steps are visible anywhere in the district. The land with reference to soil has to be surveyed and proper land use

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to be made and proper drainage channels have to be made. Agricultural operations and cropping patterns have to be considerably altered to stop soil erosion.

PRINCIPAL CROPS.

The crops of the district fall under three main harvest: *aghani*, *bhadai*, and *rabi*. The *aghani* is the winter crop which is cut in the month of Aghan and is composed mainly of winter rice. The *bhadai* is the early or autumn crop, reaped in the month of Bhado (August-September) consisting of 60 days` (sathi) rice, gora paddy, *marua*, maize and less important grains; while the *rabi* crop includes such cold weather crops as wheat, barley, oats, grams, pulses, etc.

Paddy.

Paddy is the important crop of this district. Transplantation method is generally used. The broadcast method is rarely practiced except in small patches spread over the district for growing gora paddy on tar land. It is shown in every part of the district.

The following figures supplied by statistics Department, Dhanbad, show the acreage and outturn of winter rice in the district from 1958-59 to 1961-62:-

Years.	Area in acres.	Outturn in tons.
1958-59 ..	1,94,121.36	92,060
1959-60 ..	1,99,585.32	1,10,748
1960-61 ..	2,29,073	1,30,899
1961-62 ..	2,30,545	1,17,803

The early months of spring are the most suitable time for preparing land not bearing a second crop, by repeated ploughing.

In the last week of May and 1st week of June, after a good shower the field for cultivation is ploughed about four times and the paddy seed is thickly scattered over it for raising seedlings. When the seedlings are ready the field where transplanting is to be done is prepared by repeated ploughing and puddling. The rain usually sets in by the second week of July and the land retains the major portion of water in it. It is repeatedly ploughed and puddled and the whole field is reduced to thick mud. The young seedlings are then taken out of the nursery and transplanted in rows at about a distance of 8 to 10 inches.

Bhadai or autumn rice is generally sown on high land. The field is ploughed 10 to 12 times after the first showers of spring and seed is transplanted and rarely broadcast either in April or May.

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Storage.

The grains are kept in bundhs prepared by twisting the straw to form ropes that are bound round and round to form a spherical basket closed on all sides. This is a primitive and cheap method but quite useful. There is no ware house facilities to the average cultivators. There is no doubt that a considerable portion of the paddy is lost faulty storage.

Wheat.

Wheat is the most important rabi crop. It requires clayey soil of medium elevation. The sowing starts from the middle of October and it continues up to the end of December. The harvesting starts from the month of March and continues up to April. The figures below have been supplied by the Agriculture Department, Dhanbad regarding the acreage and outturn of wheat:-

Year.		Area in acres.	Outturn in maunds.
1958-59	.. ..	497.27	2,490
1959-60	.. ..	566.35	2,830
1960-61	.. ..	218.03	1,095
1961-62	.. ..	147.00	835

The statement showing the areas and yield of some other crops from 1958-59 to 1961-62 has been supplied:-

Year.		Area in acres.	Outturn in maunds.
		Barley.	
1958-59	.. ..	455.5	2,275
1959-60	.. ..	82.80	410
1960-61	.. ..	49.06	245
1961-62	.. ..	54.00	270
		Gram.	
1958-59	.. ..	46.68	230
1959-60	.. ..	377.64	1,885
1960-61	.. ..	471.23	2,355
1961-62	.. ..	396.00	1,980
		Maize.	
1958-59	.. ..	11,432.23	19,456
1959-60	.. ..	13,215.69	1,05,720
1960-61	.. ..	13,731.00	1,09,848
1961-62	.. ..	13,803.00	1,10,424

AGRICULTURE AND IRRIGATION. SUGARCANE.

Among non-food crops sugarcane is most important although there is very small cultivation of it. the following figures supplied Agriculture Department, Dhanbad shows shows the acreage and outturn Sugarcane in the district :-

Year.	Area in acres.	Outturn in maunds.
1958-59	306.65	61,200
1959-60	257.66	51,400
1960-61	268.00	53,600
1961-62	214.00	42,800

VEGETABLES AND FRUITS.

Vegetables and fruits locally grown are in great short supply. The districts needs are meet from Ranchi, Gaya, Patna, Biharsharif, etc. The industrialisation of the district has led to an expansion of population. More and more of lands used for growing vegetables and crops are coming under industrialisation .

The important vegetables commonly grown are potato, brinjal, lady's finger, tomato, chillies, cauliflower, cabbage, beans, sweet potato and spinachs, etc.

Among fruits mangoes, guavas, jack-fruits lemons, black-berries, plums, custard apples, bananas are commonly grown. The varieties are not of very superior quality. A huge quantity of fruits is imported into the district through roadways and railways. fruits are not cheap and usually do not form an item in the common menu.

ARBORICULTURE.

Different kinds of trees are found on the roadsides. Some of namely, mango, jamun, pipal, palash, kachanar, amaltash, sirish, sakhua, kathal, and shisho. Kachnar shisho and sakhua, are generally founds on either side of the Grand Trunk and roads. Some of them bear fruits and flowers and offer good Some of the roads in Dhanbad town have got old trees vizaltash and krishna chura. They could be alternately planted by side of the roads to offer beautiful yellow and red flower in the summer. In Dhanbad town, Sindri, Panchet and Maithon, there are of amaltash and krishna chura which present a good sight of yellow red flowers in summer. There is ample need and scope arboriculture in the district. It is unfortunate that many of the trees by the roadsides are declining and are not being replaced. collieries and industrial concerns had attractive gardens with ective tree But many of the present managers and owners have

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not taken much interest in them. The new townships like Sindri, Maithon, etc., have, however paid some attention to the planting trees.

Regarding gardens and flowers, the taste and craze are on the decline. Good species of roses could be grown in Dhanbad soil are there used to be good rose-gardens in some of the collieries previously Winter annuals are found in many gardens in the areas. Maithon bungalows have good gardens and are examples.

AGRICULTURAL IMPLEMENTS.

The primitive indigenous agricultural implements are still large used. The country ploughs made locally by the village carpenter still hold the market. Attempts are being made to introduce better implements through the Agriculture Department.

The approximate cost of an indigenous plough with other implements is Rs. 20 to Rs. 25. Other implements used are spade, and khurpi costing Rs. 2 to Rs. 10 respectively.

The State Department of Agriculture has introduced a set new improved implements such as senior and junior Bihar plough, sukhdha pough, junior ridging plough, etc., and they slowly becoming popular among the cultivators.

These are used if soil inversion is necessary or undesirable plant are grown in the field or for ploughing every bit of land for de ploughing.

Some of the other new implement in use are Japanese pac weeder, cutter for fodder and maize sheller. They have contribu to better agriculture.

The main difficulty in the use of the better implements such Bihar junior plough, Bihar senior ridging plough and the sukhdha plough are the poor and small size of bullocks.

SEEDS.

The cultivators generally reserve a certain portion of their fi produce for use as seed. Several varieties of improved seeds has been obtained obtained either by selection on hybridisation by the Departm of Agriculture, Bihar, at its research stations in the state or important from other research stations in other parts of India. Several important seeds have been given trial under local conditions and have b recommended to replace local seeds.

Seed Multiplication Scheme has been taken up for multiply better type of seeds to introduce them to the farmers. The aim the Government has been to open a Seed Multiplication Farms each Block headquarters. There are Seed Multiplication Farms Seraidhela, Tundi, Ratanpur, Podardih, Bhokraipur, Alakhdiha, Bakashpure, Topchan and a District Farm at Balliapur.

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Seed Multiplication Farms receive pedigree seeds from kanker or m Ranchi. These seeds are multiplied at the Seed Multiplication farms and the multiplied seeds are supplied to the big cultivators who multiply the seeds in their fields under the supervision and guidance of the village level workers who are trained personnel in the agricultural field.

The farmers and the Block Development Officers have an agreement that the seeds produced will be exchanged with the general cultivators for multiplication purpose. They get Re. 1 as premium for maund of seeds exchanged or sold with general cultivators.

MANURES.

Cow-dung, the droppings of sheep and goats and farm refuse are common manures. In the rural areas the cultivators prepare their own compost. – dung, farm refuse, etc., are collected in a pit and are allowed to compose to form compost. The pits are opened after one year and compost is taken to the field.

The outskirts of the urban areas are used by the municipalities and notified area committees to prepare town compost out of sweepings and night soil. The apathy of the cultivators to use type of manure is now being liquidated. Chemical manures are made available in Credit Agricole Depots and Co-operative societies. Leaf manure and the use of certain manure crops like *ii* and *dhaincha*, etc., are also in use to some extent. The use of manure is neither extensive nor intensive.

ROTATION OF CROPS.

The cultivators are fully conscious of the beneficial effects of rotation of crops. This is done to maintain the fertility of the soil to remove insects and pests from the soil. Crop rotation also controls the incidence of crop disease and growth weeds.

RABI

Rabi crops like wheat, barley, gram, etc., are not grown to any extent. It is only irrigational facilities are available that a crop could grow more.

MIXED CROPPING.

Grouping of two or more crops together in one and the same instead of growing them separately is called mixed cropping. usual mixed cropping pattern is as follows:-

- (1) Maize and ground-nut.
- (2) Maize and arhar.
- (3) Arhar and *moong* or *urid*.

DHANBAD. PESTS AND DISEASES

There are many factors that damage crops. Some of them like cyclones, untimely rain, very heavy rain, drought, intense cold are not absolutely controllable. Animals and birds are also damaging factors. Occasional visits of locusts damage crops heavily. There are a number of insects, pests and diseases (fungus or bacterial) that may ruin the crops. Some of the insects are ants, caterpillars, locust crickets, grass-hoppers, termites, hoppers, paddy hispa, pad bug, Potato blight, hairy caterpillar, etc. They are to be controlled by judicious use of various insecticides. Resistant varieties of seeds have to be used in some cases. In some cases seed and the soil has to be treated at the beginning.

Some of the common diseases of plants and crops are, bar foot-rot, paddy blast, paddy leaf spot, foot-rot of paddy, early or blight of potato, sugarcane smut, sugarcane red rot, wheat foot-rot stem rust of wheat, leaf rust of wheat. Various insecticides are recently recommended to fight these diseases. In some cases the seeds have to be dressed with insecticides before sowing. For some diseases leaves have to be dusted with insecticides and use of resistant varieties seeds is recommended.

There is a plant protection section of the Agriculture Department to educate the cultivators and to make the insecticides available to them. From an investigation in some of the villages it was found that it is not always easy or financially possible for the cultivators to utilize the service of this section. There are a number of specialists known as Subject-matter Specialists under the District Agriculture Officer and they are meant to carry the benefits of modern research to the cultivators at the villages. This object can only be achieved if the Subject-matter Specialists are well equipped themselves and keen on their work. No soil survey work has yet been done in Dhanbad district and there are no soil maps. The traditional techniques of agriculture are still a dead weight on the agriculture and not much has yet been done to acquaint them with the rest of modern researches. This fact was all the more apparent when investigations were made as to the improvements done so far in horticulture in this district. There is a horticulture section under the Agriculture Department and very little has been done to lay new orchards or to rejuvenate old orchards by laying different new vegetable belts. It is not known if any varieties of vegetables have been introduced in the district in last 20 years.

ANIMAL HUSBANDRY AND FISHERIES.

The livestock in this district is generally of a poor variety. Much pasturage is available although there are stretches of inferior. There is not much popular response to improve the breed of livestock.

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The following table indicates the livestock population from 1920 onwards :-

Year	Total cattle.	Buffaloes	Sheep.	Goats.	Pigs.
1	2	3	4	5	6
1920 . . .	8,03,823	1,44,772	1,42,807	2,32,833	Not available.
1925 . . .	7,57,637	1,47,396	1,29,461	3,78,034	Ditto.
1930 . . .	8,92,635	1,85,425	1,64,098	3,78,034	Ditto.
1940 . . .	7,90,940	1,45,662	1,81,228	3,54,328	37,050
1945* . .	6,34,481	1,69,535	1,37,348	2,11,764	25,801
1951 . . .	2,17,269	38,422	49,627	90,810	19,549
1956 . . .	2,92,868	55,384	75,278	1,25,151	16,943

The figures of 1956 as compared with 1951 show an increase in all the heads excepting pigs. A mere increase in the number may not mean a corresponding increase in the cattle wealth. The figure of goat population in 1956 as compared with 1951 shows that there is an increase of about 34,341 in five years. Goats are the worst enemies of crops.

The State Government have decided to encourage people for keeping more pigs during the Third Five – Year Plan. There is an idea of pig utilization by the preparation of pork, ham and bacon.

A detailed classification of bulls for Dhanbad district only according to 1956 livestock census is given below :-

Bulls over three years.

	Cattle.				Buffaloes.			
	Breeding bulls.	Working bulls.	Other bulls.	Total.	Breeding bulls.	Working bulls.	Other bulls.	Total.
1	2	3	4	5	6	7	8	9
Rural . .	1,792	1,02,567	6,571	1,10,930	1,650	29,745	2,227	33,622
Urban	9	274	4	287	4	208	2	214
Total . .	1,801	1,02,841	6,575	1,11,217	1,654	29,953	2,229	33,836

*The figures up to 1945 have been given for the whole Manbhum district as the figures of Dhanbad sub – district are not available. Later figures are only for Dhanbad district (*District Census Handbook, Dhanbad, 1951, pages 100 to 101*). Statement of figures taken from the report on Livestock Census of 1956, pages 194 to 199.

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The above figures disclose that the number of breedine bulls, both in cattle and buffaloes are less than that of working bulls.

A detailed description of cows over three years according to live-stock census of 1996 is given below :-

Cattle.

_____	In milk	Dry.	Not Calved.	For work.	Other.	Total.
1	2	3	4	5	6	7
<i>Rural</i>	30,048	33,189	12,522	1,923	2,205	79,887
<i>Urban</i>	983	381	72	50	41	1,527
Total	31,031	33,570	12,544	1,973	2,246	81,414

Buffaloes.

_____	In milk	Dry.	Not Calved.	For work.	Other.	Total.
1	2	3	4	5	6	7
<i>Rural</i>	4,308	2,573	1,090	882	334	9,187
<i>Urban</i>	778	161	33	23	2	997
Total	5,086	2,734	1,123	905	336	10,184

The population of dry cattle is more than the population of cattle in milk whereas the dry buffaloes is less than the population of buffaloes in milk.

Fodder Crops.

The straw of cereals is generally used as food for cattle. There is no reliable record to indicate the area under fodder crops. For encouraging the cultivation of fodder crops the Agriculture Department has been laying out demonstration plots and distributing seeds and cuttings of fodder crops. Very little progress has been made so far. In 1960-61, only 153.83 acres were laid out and 48 mounds' of improved fodder cuttings and 52 mounds' of seeds of seed were distributed.

Dairy farming

Dairy farming has not yet been well developed in this district. Two privately managed goshalas, one at Jharia and Katras maintain a certain number of cows and buffaloes and are private organizations. They supply only a few mounds of milk to Dhanbad town. The Co-Operative Milk Union at Basora does not keep any cattle and purchases milk from the milkmen residing in different parts of the areas

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and the supply of milk is made. It is said that the purity of milk is tested before the supply is done. This is, however, a poor specimen of the fulfilment of the objective.

Supply of milk is still in the hands of galas who are professional cow herds. Milk is becoming a problem in the district.

Sheep Breeding.

Sheep breeding could be a useful subsidiary occupation. There are gareris who belong to a shepherd cast and are professional sheep breeders. The census figure would show that the sheep population has been declining although there was a somewhat revival in 1956. The Animal Husbandry Section could give no reason for this. Wool from the sheep has a ready market and particularly in Hazaribagh Central Jail. Mutton is also in great demand. It is doubtful if the census figures are very correct.

Poultry Farming.

The aboriginals of the district keep poultry as a matter of routine. The economically backward Muslims also keep poultry and derive a side-income. There is a great demand for good birds and eggs throughout the district. There is an abundance of scope for development of the poultry farming. There is one Government poultry farm at Dhanbad and five hatching poultry centres at Govindpur, Nirsa, Tundi, Topchanchi and Chas. There are five private poultry farms, two are at Dhanbad proper, One at Nagnagar, one at Chirkunda and one at Maithon. The Community Development Blocks are expected to encourage poultry rearing but not much appeared to have been done so far.

Livestock census figure of poultry from 1945 to 1961 is follows:-

1945	..	..	..	1,13,803
1951	..	..	..	1,57,850
1956	..	..	..	1,89,528
1961	..	..	..	4,30,714

If the figures are correct, there has been some development in poultry rearing. It may, however, be observed that the hatching centres have not yet been able to improve the breed of the birds. During the years 1956-57 to 1961-62 only 9,554 birds have been distributed for breeding purposes. It is a notorious fact that not all birds so distributed are used for that purpose.

The price of a roast chicken in Dhanbad is near about Rs. 3 to Rs. 4

Measures to improve the quality of Breeds of Animals.

Efforts are being made by the State Government to improve the quality of breeds of animals by distribution of birds of improved



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varieties. Yorkshire boars, etc., and by the opening of artificial insemination. There are artificial insemination centers at Dhanbad and Sindri with sub-centers at Govindpur, Nirsa and Topchanchi. Annually District Cattle Show at Dhanbad is organized. It cannot, however, be said that the measures have had any substantial achievement.

Animal Diseases and Veterinary Hospitals.

The diseases, from which animals generally suffer in the district are reinterprets, septicemia, anthrax, black quarter and foot and mouth diseases. All outbreaks are attended to promptly with sera and vaccine. Mass inoculation is done against these diseases for which specific vaccines are available.

The following figures of vaccination against these diseases in 1960-61 and 1961-62 have been supplied by the Animal Husbandry Department :

Year.	Rinderpest.	Haemorrhagic septicaemia.	Anthrax	Black quarter.
1960-61	7,894	6,844	2,709	3,714
1961-62	Nil	7,971	14,008	3,741

In The district of Dhanbad, there is one Veterinary Hospital at Dhanbad and Class I dispensaries are at the following places :-

- (1)Govindpur, (2) Nirsa, (3) Tundi, (4) Topchanchi, (5) Kenduadih, (6)Chandankeari, (7)Baliapur, (8) Sindri, (9) Baghmara, (10) Katras, (11) Rajganj, (12) Jorapokhar.

Fisheries.

The rivers, streams, low-lying fields which accumulate water in the rainy season, ponds and marshes indicate a rich potentiality for this district. A large number of tanks are kept reserved for rearing fish. There are 3,513 such tanks in the whole district reported by fisheries Department, Dhanbad. The recent rehabilitation of some displaced families from East Pakistan belonging to fishermen class near about Barakar and Damodar rivers has given a great incentive to fish culture. These displaced Bengali fishermen are experts in catching fish with their large net (mahajal) from which fish could hardly escape. The presence of ice factory and a large fish consuming public indicate an assured consumption of large quantities of fish within the district.

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The State Government has taken up a scheme for development of fisheries. One inspector of Fisheries has been appointed under the administrative control of the District Agricultural Officer. The Fishery Inspector is expected to look after the development and exploitation of suitable water reservoirs in the district. He is also required to look after the welfare of the fishermen and to do a necessary amount of propaganda and demonstrations. The achievement so far has been imperceptible and the condition of the fisheries and the fishermen continues to be almost the same as it was two or three decades back. No active Fishermen's Co-operatives have been functioning and the middle men continue to exploit the poor fishermen. There has been no serious attempt to tap the paddy fields which can grow a large quantity of fish. No attempt has been made to introduce new varieties of fish. No attempt has been made to introduce new varieties of fish. On the other hand many of the species are on the decline.

The main occupation of the men belonging to castes Mallahs, Keuts, Banpars or Tiars is to catch fish and do other allied work for marketing fish. There are regular villages in this district mostly located by the Barakar and Damodar river side. Fishermen usually live in a distinct tola or tolas of the village or town. This is the case at Chas, Baghmara and Nirsha. According to the census conducted by Fishery Department the total population of fishermen in the district came about 4,464. The bulk of their catch is sold to a few traders who belong to other castes, such as, Gwalas, Kurmis and Muslims. These are big traders who directly export and import fish. Quite a large quantity of fish is received in Dhanbad market everyday from the other side of Bihar, Uttar Pradesh, West Bengal and Bombay. Occasionally, particular kinds of fish like lobsters, hilsa and bhetki, etc., packed in ice are imported from Calcutta. Fresh fish from Maithon area is exported to Asansol and Calcutta.

In Dhanbad town fish first goes to the wholesale fish market at Purana Bazar at Dhanbad and Jharia. From these markets fish is sent to retailers on auction basis.

The chief fish markets and trade centres in the district are at Jharia, Katras, Sindri, Chirkunda and Dhanbad. The following are some of the species of fish that are commonly available: rohu, katla, boari, tengara, hilsa, bachwa, jhinga, carp, featherbacks, murrels, mrigal, pangas and prawn etc. A variety of small fish called pothia is also common here.

In this district two types of crafts, viz., (i) dug out canoes and (ii) plank built boats are used for catching fish in Maithon and Panchet dam. Dug out canoes which ply in the rivers are stable and cheap. Plank built boats of various types are used in the strong current of the river like Barakar and Damodar. The small canoes are commonly used for catching hilsa, prawn, etc. Various types of nets and spears are used for catching fish.

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The average daily consumption of fish as reported by the Inspector of Fisheries in the whole of Dhanbad district according to season is given below:-

January to March----- 400 maunds.
 April to June -----350 maunds.
 July to August-----300 maunds.
 September to December ----500 maunds.

This estimate does not seem to be very correct. On enquiry it was found that in Dhanbad district about 1,00,000 maunds of fish are imported yearly from other parts of the State and outside State. With the implementation of new irrigational development schemes, which have a direct or indirect bearing on fisheries, pisciculture is bound to gain more importance in this region. The Ice Factories in Dhanbad sell daily about 500 maunds of ice for the fish trade. Fish is not salted for sale.

There is some reluctance among the younger generation of Mallahs to take to fish trade. On getting some education they, like other educated youngmen hanker after soft collared jobs and desert the profession of catching fish. The other obstacle that stands in the way of the development of fishery industry is the lack of capital amongst the fishermen.

FORESTS.

The forests of Dhanbad district extend over an area of 104.96 square miles in 1962.

Sadar subdivision has 62.36 square miles and Baghmara sub-Division 42.60 square miles of area under forest. The total area of the district is 1,114 square miles. The area under forest is very small. The forests of this district are mostly in Tundi, Topchanchi, Govindpur and Nirsha areas which are to the north-east of the district.

Forest Management.

Formerly when forests covered most of the land surface and clearance of jungle was necessary or laudatory, nobody cared as to what happened to the forest. Cutting went on without let or hindrance. As the population grew, more cutting took place and denudation was the result.

The Government-owned forests in Tundi and Topchnchi *thanas* were constituted reserved or protected forests and given protection and scientific management. The rest belonged to the *zamindars* who exploited them for money. The crisis was reached during the period of the Second World War. An unlimited demand for timber and poles arose from the coal mines area and those forests being the most accessible received the full brunt of the fury of cutting. Indiscriminate fellings went on everywhere and almost all the good timber was cut and removed. Efforts had earlier been made in this

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district, as elsewhere in Bihar, to induce private forests owners to come to an agreement with Government under the provisions of section 38 of the Indian Forest Act for scientific management of their forests on very agreeable. They accordingly held out. Seeing that the conditions had already deteriorated to a point of almost irretrievable damage to the national property, Government had to step in and the Private Forests Act of 1946 was enacted. The forest Act had received a wide publicity during its bill stage and people hurried in all corners to lay by what they could before as they mistakenly understood. Provisions of the Forest Act also proved unequal to the occasion. For over an unavoidable period of formslities the forest almost hung in the air, it was taken away from the owners but not taken over by Government and nobody could effectively protect it. The Forest Department Officers and men had to work against an overwhelming tide of psychological and physical opposition both from the owners and the people in general the owners opposed and spread disaffection against Government and the Forest Department because they did not relish the forests being taken away from their hands; the people opposed because although they would gain in the long run by the continued existence of the forest, they were subjected to control and regulation. Ultimately in 1950 the Bihar Land Reforms Act came into operation and all the private forests vested in the State. Now the entire forest area in Dhanbad district is the property of the State. Scientific management has been extended to all the forests.

Description of the Forests.

The predomination species is sal. The sal forests will have to be rehabilitated. At present pole size, namely, 1½ to 2½ feet in girth, is common but over extensive areas only saplings exist.

Bamboo is an important associate of the sal tree. Bamboo is not uniformly distributed but occurs in special localities. The chief locality is the region from Govindpur to Chandankeari. The entire bamboo area needs rehabilitation.

Simul is fast reaching a state of extinction because it has been very extensively cut both for the match factory and for packing purposes.

Mahua is another tree that commonly occurs in this forest, particularly on the fringes. Mahua flower is much prized as an item almost of staple food for the poorer class for a part of the year. Elsewhere also the people supplement their food by mahua flower and the rest goes to the distilleries. Its seed also yields useful oil. The local population use it sometimes for cooking purposes or for lighting and the trade uses it in the soap industry.

Palas also occurs plentifully in rest and localities chiefly in Govindpur, Tundi and Tundi and Topchanch areas. It is an important specie, for cultivation of lac.

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Kusum is another important lac-host but occurs scattered about and not in groups or patches like palas. Kusumi lac is about the best in quality.

Trees of harre, bahera and amla jointly yield the well known myrobalan trade. These Myrobalans are used chiefly for tanning industry and there is a restricted quantities in Ayurvedic medicinal system for manufacture of triphala, adecoction used as a purgative.

kend is another species of almost universal occurrence. It is prized for its fruit which the local people eat with relish. It ripens in April-May when the paddy stock runs short and thus comes in handy as a supplement to food. The timber of this tree yields ebony which is much fancied in furniture trade, but only big trees yied ebony in substantial quantity for it comes out of the very core of her wood. Big trees capable of yielding ebony ere not common.

Asan is utilised for growing tassar cocoon. Sal is also a secondary species for cocoon rearing.

Piar is also quite common and is prized for its fruit. The pulp is eaten and the kernel of the seed is used in the preparation of sweets.

Bhelwa fruits when ripe and dry are also eaten. specially in the forests of Tundi and Topchanchi areas. Tundi seed is the common dhobis nut it yields an acrid which indelibly marks cloth.

The names of a few of the other common species that generally occur in the forest of Dhanbad district are: *paisar, gamhar, bhukund, semuk, karam bet, matasur, siris, dhaura, jaba, kachnar, kasai, bhuiksumi, sonari, putri, makarkend, jamun papra, korajia, or kurchi, jiirhut, bankapria, kamla, doka, fenfena, rohin, roronga, dhabai, ber, kathber, khajur sidha, kahua, chireta and parjan.*

Most of these forests are burdened with rights. The general rule is that the inhabitants of a village within the cadastral boundaries of which the forest is situated have the right to take for their own bone fide use, but not for sale or barter, whatever forest produce they may reequire. The management of forests is therefore so designed that the requirements of these right holders are first implemented and the surplus is sold for use of those who have no rights or for export to other markets.

Revenue.

The revenue derived from the forests in Dhanbad district from the year. 1957-58 to 1961-62 is as follows:-

Years.	Rupees.
1957-58	78,889
1958-59	70,248
1959-60	49,348
1960-61	1,28,342
1961-62	1,28,422

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Afforestation.

As has been said in the foregoing paragraphs, large stretches of land which once were covered with fine forests have since decades been completely denuded of all vegetation and stand out as desolate brown wastes on which not even grasses can grow. Large parts of such wastes have been gullied and deep ravines formed therein. For reclothing such denuded land and for arresting the progress of gully formation, afforestation schemes have been taken up. Afforestation has only recently been started and has been carried out at Chas and Topchanchi areas. The scheme is to afforest 2,000 acres annually.

STATE ASSISTANCE TO AGRICULTURISTS.

Loans to the cultivators for relief of distress, purchase of seed or cattle or any other purpose connected with agricultural objects are given by the State Government through the District Magistrates and the Subdivisional Magistrates under the Agriculturists Loans Act XII of 1884 and Land Improvement Loans Act XIX of 1883. The loans are repayable in instalments within a period not exceeding twenty years. There are a number of requirements which have to be fulfilled before any loans are granted and the formalities are looked upon with disfavour. The formalities are necessary for security of repayment but the delays could be cut down. There is hardly any check to see that the money advanced is properly is properly utilised. It may be mentioned that the village mahajans have not been liquidated at all and cultivators still prefer to go to them as they grant loans much more quickly although the rate of interest is much higher.

The following statement of disbursement of loans has been received from the Deputy Commissioner's Office :-

Year	Allotment received. Rs.	Loan advanced. Rs.
Agricultural Loans.		
1958-59	7,00,000.00	6,41,000.00
1959-60	2,15,000.00	2,13,000.00
1960-61	80,000.00	77,000.00
1961-62	80,000.00	64,870.00
Land Improvement Loans.		
1958-59	1,50,000.00	81,691.00
1959-60	30,000.00	24,540.00
1960-61	30,000.00	17,000.00
1961-62	20,000.00	9,080.00

**DHANBAD.
NATURAL CALAMITIES.**

Agriculture in Dhanbad district is still very much subject to the local rainfall. Any deficiency or excess of rainfall or untimely distribution will lead to conditions adverse to agriculture and there may be failure of crops. The district is not subject to floods but is very much subject to droughts. There have been periods of famine and acute economic distress from time to time.

Famine of 1866*

The immediate causes of the famine was an excess of rainfall in the earlier part of the monsoon period which hampered agricultural operations and ruined the crops. This was followed by a sudden and early cessation of rain which practically destroyed the monsoon and the winter crops. The harvest of 1863 and 1864 also had been below average and the failure of these crops caused a severe famine. The district of Manbhum in his letter no. 822 dated the 28th August, 1886, wrote to the Assistant Commissioner of the then Gobindpur subdivision (now a part of Sadar subdivision, Dhanbad) that the zamindar of Jharia had reported 600 deaths in the pargana from starvation and that the Rani of Pandra was feeding 1,700 starving people daily and similar reports were being received from other quarters. He wanted rice to be procured from Bancorrah and other area.

The situation was aggravated by the moodis who had hoarded grain and grain depots were opened at Govindpur and other places. To meet the situation rice was distributed to the incapacitated and labour on waages was utilised in making a road connecting Jharia with Govindpur, Joining the road to Ranchi.

Famine of 1867*

The famine conditions prevailing in 1866 continued in 1867. But timely rain in that year was a boon and the price of rice fell to 27 seers a rupee from 7 seers a rupee.

Famine of 1874*

There was insufficient or almost no rain in the months of June, July, August and September in 1873. The result was a crop estimated at only half the normal for the district as a whole. The price of rice rose from 15½ seers in January to 13 seers in April when Government importations had begun to arrive. During April the ripening of the mahua harvest prevented a further increase of distress, the mahua blossoms affording cheap food to the poorer classes. Meantime the relief works had already been started on a small scale in February. Relief works were taken up and doles were also given.

*Old English Correspondence, Vol. no. 57/37A, Manbhum, 1866-67.

*Old English Correspondence, Vol. no. 97/37A, Manbhum, 1867-68.

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By September the position became much better and the relief works were closed down. With the advent of the first of the new crop in the market prices quickly fell in November and December to 22 and 24 seers and any cause for further anxiety had entirely passed away.

Scarcity in 1892.

Rainfall in 1892 was deficient and badly distributed and in consequence the outturn of both the autumn and winter crops was poor. In the previous year there has been crop below the average and prices had generally risen. The district was, however, just then being opened out by railways and the mining industry was beginning to develop and in consequence the demand for labour was considerable. There was scarcity in some pocket only.

Famine of 1897

In 1895-96 the rainfall was small. The *bhadai* crop was an average one and the winter crop was poor. The result was that prices had begun to rise as early as the beginning of 1896, and by September had risen to 11 seers at Govindpur. In the Govindpur (Dhanbad) subdivision conditions were more favourable but in the two succeeding months the rainfall was in marked deficiency. The fall in September was not sufficient and October was absolutely rainless. The result was that the outturn of *bhadai* crops was only half of the normal, and of winter rice less. To add to the misfortune the *mahua* crop was seriously damaged by the untimely rain in March, 1897. Prices had by that time risen to 9 seers at Govindpur, and gratuitous relief to beggars and wanders was necessary. By the third week of February gratuitous relief was being administered to nearly 4,500 persons and test works were opened in Govindpur, Tundi and Chas. The price of rice had risen to 8½ seers per rupee in April, and by the end of May only 7⅝ seers were obtainable at Govindpur which reached as high as 7 seers per rupee at the end of the latter month. Relief works were given to many people during May and June and till November manual works and gratuitous relief centers were opened and relief was given to the people at large. The prices of commodities began falling then and the prospects of the new crops assured and at the end of October the operations were finally closed. Dr. A. Campbell of the Free Church of Scotland Mission at Pokhuria did a very useful and unostentatious work in this connection.

Later History.

Since 1897 there were comparatively short crops in 1904-05, 1906-07 and 1907-08 and in the last year the situation was one, which gave rise to considerable anxiety in certain pockets more remote from the railways. As early as October 1907 the price of rice had risen to 7 seers per rupee. There was also a severe epidemic of cholera originating from the fields. The distress forced many people to sell part of their holdings. Loans were distributed under the Agriculturists' Loans Act and the Land Improvement Loans Act.

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Distress in 1920-21.

During 1920-21 there was drought in Dhanbad. Heavy rains in the early part of the monsoon proved disastrous to the *bhadai* crop and the complete cessation of the rains in September seriously affected the winter rice and *rabi*.

1933-34- During 1933-34, *mahua*, an important food crop suffered considerably from drought and hailstorms. The earthquake did some damage to standing crops. Rivers and tanks were silted up, wells were choked with sand and some were completely ruined. The earthquake on January 15, 1934 did not affect the agricultural operations very badly but threw the normal conditions out of gear from sometime. The rate of wages fell abnormally and affected agricultural operations.

1940-41- There was a partial failure of crops due to want of timely rainfall, but on the other hand the rise in the prices of food grains due to the war and the reduction of rents of holdings benefited the agriculturists to some extent.

The prices of rice and other necessities of life showed an upward trend but measures to control prices, initiated under instructions of Government, checked profiteering to some extent.

There was indication of distress among the people of Topchanchi thana in Dhanbad subdivision due to failure of rain and Rs. 7,000 was granted under Land Improvement Loans Act. Dhanbad Local Board also sanctioned Rs. 2,500 for Topchanchi Katras Road to find employment for the people.

1943-44- The paddy crop was not satisfactory in Dhanbad. Owing to Second World War the prices of all commodities and food stuffs reached a considerable higher level, but Price Control Measures acted as a check. The price of coal also rose due to scarcity of wages and increased demand by various industrial concerns.

1945-46- The *bhadai* and winter rice crops failed. Though the Second World War ended but the prices were at the same high level and especially of rice rose considerably due to acute food shortage.

Distress during 1957-58 to 1958-59.

The years 1957-58 to 1958-59 were, however, a period of rather acute economic scarcity. The cause of distress was due to failure of *bhadai* crops and damage of *aghani* crops due to late transplantation and failure of *Hathia* rains. The extent of failure of harvest was almost 50 per cent.

Relief operations were started in the month of October, 1957. In order to co-ordinate the relief operations at different centers, a District Relief Committee consisting of officials and non-officials was formed in 1957. The areas that were declared to be more distressed

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were Nirsa, Chirkunda, Tundi, Jogta, Jorapokhar, Baliapur, Kendadih and Govindpur of the Sadar subdivision and Topchanchi of the district. The distress was acute in the entire non-industrial areas of the district, which continued till the end of November, 1958.

At the initial stage, emergency irrigation measures were undertaken by launching a special drive and approachable paddy fields were irrigated by different types of pumping sets from available sources of water.

Hard Manual Labour Schemes were undertaken by digging *kacha* wells, desalting of wells and tanks, construction of *kacha* roads, embankments, *nallahs* to provide employment to the people affected. The schemes continued till November, 1958.

There *charkha* centers under the Bihar State *Khadi* Board were started during the year 1958-59 to employ persons. A total quantity of 722 mounds and 20 seers of wheat were distributed to trainees at these centers and a sum of Rs 751.14 n.p. was given in cash.

Public health was satisfactory. Medical and public health arrangements were taken in hand and the incidence of mortality was checked.

In the year 1957-58 to 1958-59 during the scarcity period the total area and population affected were 930 square miles and 514.795 souls respectively. Relief measures were taken during these year. A sum of Rs 16,600 was distributed towards relief works in shape of construction of roads and houses, etc., and Rs. 6,41,500 were distributed as agricultural loan and Rs. 61,000 and Rs. 55,000 towards Land Improvement Loans during the years 1957-58 and 1958-59 respectively.