

ABOUT US:

HISTORY –

Cinchona cultivation in the Bengal Presidency was begun under the direction of Dr. Thomson Anderson, Superintendent of the Royal Botanical Garden, Calcutta. Subsequently to the death of Dr. Anderson, the Darjeeling plantation has been under the charge of Dr. Anderson's successors, viz., Mr. O. B. Clarke, during 1870 and 1871, and Dr. George King, since the latter date.

The cultivation of *Cinchona* in Darjeeling was commenced in 1861-62. The object of Government in maintaining these plantations was to supply the hospitals and the people with a cheap remedy for malarial fever. In the year 1906, the Government *Cinchona* Plantation comprise the following : (1) the Rangju Valley block, consisting of the Rangbi and Mungpoo Divisions, which together measure about 900 acres, containing nearly over 2 million plants, of which more than a million and half are *Cinchona (calisaya) ledgeriana*, nearly half a million of hybrid, and the remainder of *Cinchona succirubra* ; (2) the Rayang Valley block, consisting of the Sitong and Labdah Divisions which together comprise an area of about 600 acres, with over 200,000 plants, more than half of which are *Cinchona succirubra* and hybrid, and the remainder *Cinchona (calisaya) ledgeriana*; and (3) the Rangju Valley block comprising the Mungpoo Division.

DIRECTORATE:

The Directorate started its functioning since 1862 right from almost foot hills to an altitude of 1800 M in the hilly terrain of Darjeeling District. The initial objective of the Directorate was to grow different species of *Cinchona* trees to produce the life saving Anti-Malaria drug Quinine from the bark, later on the activities of the Directorate expanded and the cultivation started like *Cephaelis ipecacuanha*, *Dioscorea composite*, *large Cardamom*, *Rubber*, *Mulberry*, *Turmeric*, *Taxus bacata*, *Broom stick*, *Citronella*, *Vetiver*, *Lemongrass*, *Artemisia annua*, *Mandarin Orange etc.*

Since inception it has been extended to the three Sub-Division of Darjeeling District thereby becoming one of the largest Directorate in terms of manpower and area in the hills of Darjeeling covering a total Area of 26,181.50 Acres.

The Directorate has 4 (four) plantations as follows:

- a) Mungpoo – established in 1862
- b) Munsong – established in 1901
- c) Rongo – established in 1938
- d) Latpanchor – established in 1943

(A) PLANTATION

1. Mungpoo (Estd. 1862, Total Area – 10,023.72 acres):

Govt. Cinchona Plantation, Mungpoo, the headquarter of the Directorate was established in the year 1862. It is 33 km East of Darjeeling town. It falls under Darjeeling Sadar Sub-Division of Darjeeling District.

The Plantation consist of four divisions viz. (i) Mungpoo (ii) Reshep (iii) Labdah and (iv) Ronju Valley.

The total area covered is 10,023.72 acres.

Altitude	:	1200 ft to 6170 ft MSL
Temp (Max/Min °C)	:	30/08
Avg. Rainfall	:	4500 mm per annum.
Agricultural Scenario	:	Major crops being cultivated Presently are <i>Cinchona</i> , Ipecac, <i>Taxusbaccata</i> , and Chirata.
Climate	:	Humid temperate
Water resources	:	Lift irrigation from jhoras
Soils Analysis	:	Typical Hilly soil with high organic matter, acidic in reaction coarse texture.
Daily Wage labourers	:	1757 nos.

2. Munsong (Estd. 1901, Total Area – 9,361.80 acres):

Govt. Cinchona Plantation, Munsong, was established in the year 1901. It lies 23 km North of Kalimpong and on the border with Sikkim. The total area under Govt. Cinchona Plantation, Munsong, is 9,361.80 acres.

There are five divisions in the Munsong Plantation viz. (i) Sangseer (ii) Burmaik (iii) Munsong (iv) Kashyem and (v) Rangpoo.

The Munsong Plantation is famous for high alkaloid content *Cinchona* plantation.

Altitude	:	1200 - 5800 ft MSL
Temp (Max/Min °C)	:	35/05
Avg. Rainfall	:	5000 mm per annum.
Agricultural Scenario	:	Mostly wild plantation, <i>Cinchona</i> , Ipecac, Rubber and large cardamom forming the major plantation.
Climate	:	Temperate, Sub humid
Water resources	:	Natural Springs and Jhoras.
Soil Analysis	:	Organic matter is more than optimum, major, secondary and trace elements are low to medium, pH acidic.
Workers	:	1188 nos

3. Rongo (Estd. 1938, Total Area - 4210 acres):

This plantation came into existence in the year 1938, which was the result of the serious efforts given by Mr.O.M.Martin. Esq.,C.I.E, I.C.S ., Secretary of the Govt. of Bengal on letter No.7497-Cin., dated 14/04/1938, on experimental basis for five years from the Forest and Excise Department, Govt. of Bengal.

Later, as it is revealed from the Govt. Memo. No. 16495-Cin., Calcutta, dated 16th of April,1943. Rongo Plantation was approved by the Govt. of Bengal on a permanent footing with effect from the 1st April, 1943. After post independent scenario, this Plantation was included under Commerce and Industries Department, Govt. of West Bengal, under which this land was transferred from Reserved Forest area to Commerce & Industries Department. vide Memo. No. 2402/8-12 dated 15/04/1957 on D.O. letter 521/57 dated 18/04/1957 on the letter of Dr. K. Biswas, M.A. D.Sc., Director of Medicinal Plants.

This plantation is situated at Kalimpong Sub-Division in the District of Darjeeling, at an altitude ranging from 800 ft. to 7781 ft. touching the International Border with Bhutan.

There are three divisions in the Rongo Plantation viz. (i) Gairibas (ii) Dalgoan and (iii) Rongo

Altitude	:	800 ft to 7781 ft MSL
Temp (Max/Min C)	:	36/04
Avg. Rainfall, mm	:	6000 mm per annum.
Agricultural Scenario	:	<i>Cinchona</i> , Ipecac, Dioscorea, Rubber, Jackfruit, and Coffee are the major crops.
Climate	:	Susceptible to cyclonic effect
Water resources	:	Dugwell, Bore well, riverlets.
Soils Analysis	:	Reddish black, acidic, medium textured, fertile with optimum available plant nutrients.
Workers	:	1656 nos

Part of this plantation falls under Elephant Corridor and is visited by number of elephants every year. Often they destroy the plantation crops and the most remarkable being the Ginger plantation at Naxal during the year 2014-15 where 40% of the crop was damaged by groups of elephant which visited twice. This year, again 15,000 number of Rubber seedling in the seed beds of one year old plants and 2500 number of grafted rubber plant in Naxal area under Rongo unit by 45 herds of elephants that visited the area in September 2015.

4. Latpanchor (Estd: 1942, Total Area – 2445.17 acres):

Latpanchor Govt. Cinchona Plantation, a smallest and youngest plantation in the Directorate was established in the year 1943. It falls under Kurseong Sub-Division of Darjeeling district. Latpanchor plantation lays 30 km East of Kurseong town and 40 km North of Siliguri town. This plantation consists of 2 divisions viz. (i). Latpanchor division and (ii).Sittong division. The area of latpanchor division was transferred from the Reserved Forest land of Forest Department and the Sittong Division from Mungpoo plantation to Latpanchor plantation.

Altitude	:	MSL 1200 – 5000 ft
Temp (Max/Min °C)	:	34/08
Avg. Rainfall	:	4600 mm per annum
Agricultural Scenario	:	Cinchona, Ipecac, Mandarin Orange and Coffee.
Climate	:	humid, temperate
Water resources	:	Stream and Riverlet, bore well.
Soils Analysis	:	pH 4-7 normal acidic, Reddish colour, sandy, loomy Black.
Workers	:	1320 nos

This plantation also has Elephant Corridor where the animals visit annually albeit unlike in Naxal, there is no crop damage so far bearing minor loss.

AREA STATEMENT (As stood on 01-04-2015) in acres							
		Mungpoo	Munsong	Latpanchar	Rongo	Ambotia	Total
A. Productive Crops Land (Ac):							
1	Cinchona	2609.37	2678.26	1321.51	780.00	36.00	7425.14
2	Ipecac	27.82	15.16	7.46	29.20	0.00	79.64
3	Dioscorea	0.98	1.70	0.00	6.00	0.00	8.68
4	Cardamom	22.10	5.92	4.20	0.00	0.00	32.22
5	Rubber Plantation	29.23	39.24	4.81	207.62	0.00	280.90
6	Taxus baccata	59.32	0.00	0.00	0.00	0.00	59.32
7	Chirata	29.72	0.00	0.00	0.00	0.00	29.72
8	Broom Stick	21.20	2.00	0.00	0.00	0.00	23.20
9	Cin/Affo/Rub/Nurs	34.82	39.75	3.37	16.40	0.00	94.34
10	Mandarin Orange	124.28	2.00	137.29	0.00	0.00	263.57
11	Subsidiary Crop	37.15	4.00	3.90	4.51	0.00	49.56
12	Food Processing	60.36	0.00	0.00	0.00	0.00	60.36
TOTAL		3056.35	2788.03	1482.54	1043.73	36.00	8406.65

AREA STATEMENT (As stood on 01-04-2015) in acres							
		Mungpoo	Munsong	Latpanchar	Rongo	Ambotia	Total
B. Greeneries (Ac):							
1.	Bamboo	136.88	96.00	60.01	169.00	0.00	461.89
2.	Thatch	79.94	62.25	1.00	8.61	0.00	151.80
3.	Afforestation	1418.49	793.30	198.15	173.85	0.00	2583.79
4.	Forest/Jungle	1933.87	1336.00	160.28	808.56	0.00	4238.71
TOTAL		3569.18	2287.55	419.44	1160.02	0.00	7436.19
C. Other land (Ac)							
1.	Electric & crematorium	0.00	0.00	0.00	0.00	0.00	0.00
2.	Research Complex	61.94	0.00	0.25	10.00	0.00	72.19
3.	Fallow/Cultivable	338.44	423.56	16.61	376.61	37.00	1192.22
TOTAL		400.38	423.56	16.86	386.61	37.00	1264.41
D. Non Productive Land (Ac)							
1.	Mazdoor's Colony	1376.22	796.92	227.20	986.33	0.00	3386.67
2.	Bung/Off/Staff qtr/Godown etc.	46.45	20.25	45.27	108.05	0.00	220.02
3.	Hospital/School/Welfare	23.01	9.22	6.72	18.75	0.00	57.70
4.	Road & Path	214.87	281.63	51.04	44.00	2.00	593.54
5.	Uncultivable	1085.24	2727.94	196.10	457.11	80.00	4546.39
6.	Factory/Reservoirs	4.10	4.70	0.00	5.40	0.00	14.20
7.	Busty Land	157.47	22.00	0.00	0.00	0.00	179.47
9.	N.H.P.C.	90.45	0.00	0.00	0.00	0.00	90.45
TOTAL		2997.81	3862.66	526.33	1619.64	82.00	9088.44
GRAND TOTAL (A+B+C+D)		10023.72	9361.80	2445.17	4210.00	155.00	26195.69

Subsidiary crop: Coffee, Peach, Kiwi, Citronella, Horticulture, Floriculture, Keno, other medicinal plants

(B) Government Factories:

The Directorate of Cinchona and Other Medicinal Plants has three factories and the brief accounts of the factories are given below:

1. Govt. Quinine Factory, Mungpoo (Estd. 1874):

Govt. Quinine Factory, Mungpoo, was established in the year 1874, it is one of the oldest factory in the District of Darjeeling. The end product of Govt. Quinine Factory, include life saving anti-malaria drug called Quinine, Quinine Sulphate, Quinine Hydrochloride, Cincodine, Quinindine etc. The main objective behind setting up of factory was to cope up the then epidemic of Malaria. Further, the primary product of this factory *i.e.* Quinine tablet, which was considered to be cheapest drug for curing Malaria, was extensively used during the World War I and II. The importance of Quinine sulphate can be imagined by the fact that during those days, out of ten sepoys hospitalized, eight were due to malaria and not related to war injuries. Unfortunately, the Govt. Quinine Factory is not in operation now albeit the Directorate tried to run the factory to see its efficiency in January-February 2014 and it was found that it runs well and has efficiency. Reviving process is on and hopefully, soon it will come to life. However, a modernized Quinine Factory was established in 1986, which cannot be run but the one established during British era along with charcoal operated boilers seems to be perfect which the Directorate is trying to bring into operation.

2. Govt. Emetine Factory, Mungpoo (Estd. 1982):

Govt. Emetine Factory, Mungpoo was set up in the year 1982 on the technology developed in the Directorate's own Research wing. This has the production capacity of 240 kg of Emetine hydrochloride annually. All the products are of latest Pharmacopoeal standard. Emetine hydrochloride was manufactured from the dried roots of *Cephaelis ipecacuanha* at Mungpoo close to Govt. Quinine Factory. There are very few places in the world which grow Ipecac and produce emetine hydrochloride. But unfortunately, this factory had to be closed down because of various reasons of which compulsory upgradation of the factories and possession of GMP license was one of the main reasons. Now, the Directorate is trying hard to restart the factory.

3. Govt. Diosgenin and Downstream Factory, Gairibas (Estd. 1984):

Diosgenin and Downstream Factory was set up in Gairibas Division of Govt. Ipecac Plantation in the year 1984. *Dioscorea* yams is the raw material for the production of Diosgenin powder and extensive cultivation of *Dioscorea* was being done at Gairibas Division to feed the factory with raw material.

This Factory is again modified and another Downstream Factory was established in the year 1992 from where 16-DPA powder used to be produced. With the passage of time, there have

been tremendous changes and the availability of cheaper synthetic alternatives drugs resulted in the closure of these factories. However, the Directorate is planning for using this infrastructure for the production of other products from Medicinal Plants in future.

(C) **Research and Development:**

The need of Research backup for the plantation was felt by all during 1960's and establishment of Research units to support the plantation activities was carried out. Ultimately it was established in the year 1977. A laboratory unit was established where work on other Medicinal Plants including plantation support requiring finding on *Cinchona* and Ipecac was done. All the units were also supported with Research backup with scientific manpower at the unit itself. *Cinchona* being highly cross pollinated crop, its propagation through seed need special care maintaining a high level of cross pollination free situation. Thus, Research and Development for maintenance of high alkaloids yielding clones at a safe isolation distance was done by establishing Research and Development Centre at Ambotia, Kurseong in a land measuring 155 acres given by the Government in 1976.

Aim of the Research Laboratory:

1. To improve the quality and quantity of the active principle of medicinal and aromatic plants cultivated in the Directorate.
2. To introduce new high value medicinal and aromatic plants.
3. To acclimatize medicinal, aromatic and other high value plants from other region to the area under this Directorate.
4. To provide technical knowhow to the farmers of the state of West Bengal who are interested to cultivate medicinal and aromatic plants.
5. To solve physiological, biochemical, soil, genetical, pathological, etc. problems faced by the plantations of this Directorate during cultivation of medicinal, aromatic and high value crops.
6. To extend research and development works and provide facility for the scientists who want to work in the medicinal and aromatic plants of this area for the benefit of public at large.

Some salient achievements of the Research Laboratories are:

1. High alkaloid content clone of *Cinchona ledgeriana* was established in Research and Development Centre at Ambotia, which is a part of Research Section from where plantation is extended annually till today.
2. Vegetative propagation of *Cinchona* plants by the method of top working was established to make the plant true to mother type.
3. Tissue culture of *Dioscorea*, Ipecac, Chirata and other medicinal plants were done in the research laboratory.
4. Propagation and acclimatization of *Taxus baccata* at lower elevation (upto 6000 ft) was done and 55 acres plantation is established.
5. Cultivation of Citronella, Lemongrass, Ocimum, Geranium, etc. were established in commercial scale in this Directorate.
6. Pilot scale cultivation of Ipecac was continued during the lag phase of Ipecac cultivation in the plantation and supplied Ipecac seeds required by the plantation afterward.
7. As per Govt. plan, Citronella, Lemongrass saplings were provided to the farmers of Rongchong, Tashiding area and also buy back the product from the growers.
8. Extended the help of skilled officers of this unit to the plantations for technical and administrative work of the plantation.
9. Research bulletins were published continuously for the up-to-date knowledge of the research findings to the planters of this Directorate.
10. A number of papers in medicinal and aromatic plants were published in different prestigious journals.
11. Nucellar seedling of disease free Mandarin Orange (*Citrus reticulata*) plant raised and supplied to the Plantation.
12. Conducted International horticulture symposium in 1985 in collaboration with International Horticulture Society, Netherland.
13. Some of the scientists were awarded Ph.D. degree doing work in this Laboratory.
14. Provided project report for cultivation of Ginger (*Zingiber officinale*) to G.T.A.

15. Provided project report for cultivation of Coffee (*Coffea arabica*) to G.T.A. Conducted awareness program for cultivation of Orange to the farmers of Mungpoo area in collaboration of Indian Agriculture Research Institute (IARI), Horticulture Deptt., Krishi Vigyan Kendra and Citrus Dieback Research Station.

MANPOWER

SL NO	CATEGORY	NUMBERS
1	Group A	49
2	Group B	59
3	Group C	465
4	Group D	699
5	Daily Wage Workers	5350
TOTAL		6622