

Wynad Colonisation Scheme

By

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Introduction: Wynad is a taluk in North Malabar. It is a hilly and forest area, adjoining Mysore, Coorg and the Nilgiris, with an elevation ranging from 2500 feet to about 3500 feet above sea level. There are a few peaks in this region which range from 4000 feet to over 6600 feet above mean sea level. The climate is mild, the maximum temperature being about 80°F. and the minimum being about 66°F. The absolute minimum temperature seldom goes below 52°F and the absolute maximum temperature above 95°F. The average annual rainfall of the region is about 100 inches, of which about 70 inches is received during the South-West monsoon.

The tract, which is about 821 square miles in area, is very thinly populated, unlike the other parts of Malabar, and the population is estimated at 1,15,000. The indigenous population consist of *Chettys*, *Kurumas*, *Moopans*, *Naikkans*, *Kuruchiars*, *Uralies* and *Paniyas*. Some centuries back some families of *Gowders* (Jains) migrated to Wynad from Mysore and made Wynad their home. Among the above communities, *Chettys* and *Gowders* are the main land-owning and moneyed class of people. In spite of the malaria rampant in this region, on account of the availability of very cheap land, suitability of the region for growing various commercial and food crops, low labour charges and the inherent fertility of the land, a large number of adventurous people of various communities from the plains migrated to this region and settled in Wynad during the past few decades, and many of these persons became large land-owners. In addition a very large number of people from the plains have settled in Wynad as labourers in plantations. At present, the majority of the population of Wynad consists of people who have migrated to this tract, and the indigenous population is only a minority.

A wide range of commercial and food crops are grown in Wynad. Tea, coffee, pepper, orange, ginger, rubber and cardamom are the more important commercial crops, while paddy, ragi, samai, tapioca, yam, colocasia, sweet potato and banana are the main food crops. Crops like chillies, turmeric, mustard, tobacco and arecanut are also grown on a limited scale for domestic purposes. There are many tea plantations owned by a few British firms, in this tract. Most of the coffee, pepper and orange plantations are owned by people who have migrated from the plains and a few *Gowder* families, and only a very small portion of such plantations is in the hands of the indigenous population.

The major portion of the cultivable area is either grassy slopes or thick jungle, containing valuable timber trees like rose-wood, *venga*, *iyini*, *narudu* etc. and bamboo. The wetlands in Wynad consists of low-lying valleys between ranges of hillocks, in which a fairly plentiful supply of water is available during the monsoon season and until January - February, in years of normal rainfall.

2. Objects of the Scheme: There are very large stretches of Government land, both wet and dry, lying uncultivated in this tract, and prior to 1943, any person could occupy, cultivate and develop Government land by putting in a petition to the revenue authorities, and the land used to be assigned to the applicant in due course. This was a sort of encouragement to develop the region, adopted by the Government. In 1943, the Government decided to start a scheme of colonisation in Wynad to give useful employment to a large number of service personnel belonging to Malabar and the adjoining districts, who were demobilised after the end of the World War II, and to other people including the local residents and aborigines, and thereby develop the large stretches of lands lying uncultivated in the tract. When this decision was taken, a ban on unauthorised occupation of Government land in Wynad was notified by the Government.

3. Details of the Scheme: The Wynad Colonisation Scheme comprises an area of about 33,800 acres (26,000 acres dryland and 7800 acres wetland), in four villages, Muppainad, Kidanganad, Nulpuzha and Nenmeni, divided into six blocks. These four villages were selected for the scheme, as there was a very large and fairly compact area of Government land available in these villages. However, in addition to the 19,290 acres of unoccupied Government land, 7496 acres of dryland and 7014 acres of wetland were acquired by the Government for the scheme.

The total number of colonists to be settled in the scheme is about 3700, consisting of different categories of people, in the undermentioned proportion.

Ex-servicemen	62.5%
Local residents, aborigines and sivasamdars	30.0%
Other civilians (lower middle class, landless poor, ex-tappers and political sufferers)	7.5%

Each settler in the scheme is to get five acres of dryland and two acres of wetland or ten acres of dryland. In the addition to the lands to be given to each colonist for cultivation and development, separate areas have been set apart in each block for community purposes like schools, playgrounds, grazing, developing forest belts etc. Though in the early stages of the scheme, financial assistance in the nature of returnable loans was given to all the colonists in addition to the free grant of land, due to financial stringency, it was later decided that only the ex-servicemen settled in the scheme were to get a grant of Rs. 1900/- each, from the Servicemen's Post-War Reconstruction Fund for developing their plots, as detailed below:

For reclamation of dryland	...	Rs. 500/-
For reclamation of wetland	...	Rs. 200/-
For agricultural expenses like purchase of cattle, manure, seed etc.	...	Rs. 500/-
For constructing a dwelling place	...	Rs. 250/-
For domestic expenses.	...	Rs. 850/-
For digging wells and other miscellaneous purposes	...	Rs. 100/-

In respect of plots which were previously developed and for which Government had to pay compensation to the occupants for eviction, the settlers to whom such plots are allotted were to pay to the Government, in ten equal instalments, the amount paid by the Government to the original occupants who were evicted.

4. **Working of the Scheme:** Work on the scheme was started in 1944 by various departments connected with the scheme such as Revenue, Agriculture, Public Works, Public Health, Medical and the Co-operative, though the last-mentioned department has not started functioning to any appreciable extent as yet. The initial work consisted of acquisition of land, surveying, preparing plans, demarcating plots to be allotted to each settler, development of communications by improving the old cart tracks and laying out new roads and anti-malarial operations. By 1948, about 26 miles of pucca road were formed in the colonisation scheme area and the locality was almost completely rid of malaria. After various experiments on malaria control measures, spraying all dwelling places with D. D. T. emulsion of 5.0% strength at intervals of six weeks, beginning from the first week of December to the first week of June was found to be an efficient and cheap method of malaria control, costing only about one rupee per capita of the population in the areas. For the medical aid to the settlers a dispensary with facilities for treating in-patients has been opened at Ambalavayal.

The settlements of colonists in the scheme was started from March 1948 and till the end of December 1950, the undermentioned numbers of persons of the different categories were settled in the scheme.

Ex-servicemen	1168.	Aborigines	251
Ex - I. N. A. personnel	3.	Land-less civilians	6.
Local residents	740.	Ex-tappers	5.
		Political sufferers	1.

5. **The Agricultural Research Station, Ambalavayal:** I. (a) *Objects of the Station:* The general agriculture in the tract being very backward, and the scheme being essentially for the agricultural development of the tract and the climatic and other conditions in Wynad being different from that prevalent in the plains, it was considered necessary to have an agricultural station attached to the colonisation scheme to carry out research on various aspects of agriculture, for the improvement of agriculture in Wynad in general, and the colonisation scheme in particular, to carry out demonstration on improved methods of agriculture and proper developments of the holdings of the settlers in the scheme on sound and scientific lines, to carry out propaganda among the settlers on improved methods of agriculture and proper development of their holdings and to make available superior seeds, plants and planting material of various crops for distribution. Therefore an agricultural research station was opened in Ambalavayal within the colonisation area, in July 1945.

The area of the station is 250 acres, with 215 acres of dryland and 35 acres of wetland. The dryland area is set apart for different purposes as detailed below.

For cultivation of and experiments on fruit and perennial spice crops.

... 100 acres.

For office buildings, stores, labourers' quarters,
cattle and manure sheds and paddocks.

10 acres

Reserve area for extension

50 acres..

(II) *Work done so far*: The work carried out so far on different aspects and the results achieved are detailed below.

(i) *Reclamation, laying out etc.*: The work in the Station during the first three years of its inception was mainly preparing the wetlands and drylands for cultivation. The wetlands attached to the station consisted of sloping land with irregular shaped plots at the time of opening of the station. Therefore, to make the land suitable for cultivation and for various field trials, reclaiming the land and laying out into proper plots and levelling have been in progress, and an area of 25 acres has been reclaimed, levelled and laid out into proper plots with suitable irrigation and drainage channels. The dryland at the time of opening of the station was covered with thick growth of scrub jungle, bamboo and small and large-sized trees. Bringing the land into a condition for cultivation and for conducting field trials on different crops by removing by the scrub jungle, bamboo clumps and the smaller sized trees, laying out etc. were in progress, and 110 acres of dryland have thus been reclaimed and brought under cultivation of various perennial and seasonal crops.

(ii) *Research*: Various items of research on different crops have been in progress from 1948, and the results are summarised below.

(1) *Paddy*: (a) *Evolving high yielding strains of local paddy varieties*: The local varieties of paddy contain an admixture of different types resulting in uneven quality of rice and uneven maturing of the crop. Therefore, work on evolving high-yielding strains of the local varieties by pure line selection was started in 1948, and strains of six important local varieties, Palthondi, Marathondi, Velumpala, Maranellu, Chettuvaliyan and Kothandan, recording yields of over 3000 lbs. per acre have been evolved, and will be released for district trials in 1951. These strains give 10% to 30% increased yield over the local bulk in the trials carried out at the station.

(b) *Double-cropping trials*: As the local practice is to raise only a single crop of paddy in a year in wetlands, even though water may be available in sufficient quantity for raising two crops of paddy in some of the plots in most of the valleys, trials were carried out from 1948 to determine if two crops of paddy in a year, could be economically raised in such plots in which sufficient supply of water for the purpose is available. These trials have shown that two crops of paddy can be raised in a year in plots in which water is available and that the system of raising a medium to long-term crop in the first season from June to November-December and a short-term crop in the in the second season from December to April is better than raising a short term crop in the first season from June to October and a long-term crop from October to March. The former system has recorded an increased yield of about 1000 lb. per acre over the latter. Trials with different strains and varieties in the second season from December to April have shown that the strains MTU 3, Co. 13 and PTB 10 and local variety Palthondi are suitable for cultivation in this season, as these strains have recorded yields of over 1500 lb. per acre.

(c) *'Oodu' cultivation trials*: Trials to determine the feasibility of adopting 'Oodu' cultivation in Wynad to utilize the water available in valleys till February were started in 1950. The preliminary trials have not given positive result so far, but there is some indication that with suitable combinations of short and long duration types, 'Oodu' cultivation may prove suitable to Wynad conditions, and result in increased returns from the land.

(d) *Trials of different strains, types and varieties of paddy*: With a view to select the types of paddy that merit popularisation in Wynad, sixty-five strains, types and varieties of paddy including some types from foreign countries have been put under trials from 1946. As a result, it has been found that strains SLO 17, SLO 18, and MTU 19 and the local varieties Kothandan and Maranellu which have consistently recorded yields of over 3000 lb. per acre and merit popularisation in Wynad. The Kenya variety Mankora and two Siamese types of short duration have been found suitable for cultivation in Wynad.

(e) *Trial of 'Punnam' paddy varieties*: Trials to assess the suitability of *Punnam* paddy varieties of Chirakkal taluk in Malabar for cultivation in the drylands in Wynad have been carried out from 1949. These trials have shown that *Punnam* paddy varieties 'Thuthukayama', 'Palian', 'Kozhivalan', 'Vellarian', 'Vella choman' and 'Chemmalala' are suited for cultivation in the drylands in Wynad even in preference to the local dry paddy varieties 'Karuthan' and 'Poothakali', on account of their superior quality of rice. Bulk selection of these varieties have been made for comparative trials, and multiplication of the best variety for distribution.

(2) *Fruit crops*: (a) *Trial of different kinds and varieties of fruits*: With a view to select the kinds and varieties of fruits suited for extensive cultivation in Wynad, in addition to the loose-jacket orange which is already under extensive cultivation covering an area of nearly 10,000 acres, plants of various fruits, like Sathugudi orange, Malta lemon, Seville lemon, acid lime, citron, pummelo, plum, peach, litchi, avocado pear, mangosteen, durian, rose apple, cherimoyer, custard apple, bull's heart, pineapple, passion fruit, Queensland nut, cashew nut and a large number of banana varieties have been planted in a total area of about 20 acres from 1947. The study of the performance of these plants has already shown that Malta lemon, passion fruit, pineapple and banana varieties, Gros Michel, Mauritius, Chenkadali, Suganthi, Pedda Pacha Aratti, Mannan, Mysore Poovan and Nendran are suitable for cultivation in Wynad, and work on popularising the cultivation of these has already been started.

(b) *Trials on the orchard performance of budded plants, and seedlings of mandarin (loose jacket) orange*: The practice in vogue in Wynad is to plant seedlings of mandarin (loose jacket) orange. With a view to compare the orchard performance of budded plants of mandarin orange with mandarin orange seedlings and determine if the former is superior to the latter, 100 seedlings and an equal number of budded plants of the same parent trees have been planted in 1950.

(c) *Cultural trials on mandarin orange*: Very little attention in respect of cultivation and manuring is given to the orange plantations and a very large number of trees are affected by 'quick decline' and root

diseases in Wynad. With a view to carry out trials to determine the optimum cultural and manurial practices for mandarin orange trees in relation to growth, fruit quality and prevention of 'quick decline' and root diseases, and an area of 18 acres has been planted to mandarin orange seedlings in 1950.

(d) *Propagation trials on mandarin orange and nursery work:* Trials to determine the possibility of successful bud propagation of mandarin orange have been carried out, and it has been established that mandarin orange can be successfully propagated by budding on rough lemon seedlings, and that the optimum season for the operation is from January to April, when over 50% 'take' is obtained.

Large numbers of seedlings of different kinds of citrus namely pummelo, rough lemon, acid lime, sweet orange, mandarin orange, sour orange, kitchili and Wynad country orange have been raised and propagation of budded plants of mandarin orange on these different rootstocks, for trials to determine the best rootstock in relation to vigour, fruit quality and prevention of 'quick decline' and root diseases, is in progress.

A large-scale nursery of mandarin orange, acid lime, Malta lemon, Seville lemon, jack, passion fruit, coffee, arecanut, silver oak, *Gliricidia*, etc. have been raised for distribution.

(3) *Spice crops:* (a) *Perennial spices:* To determine if spices like clove, nutmeg, cinnamon and vanilla can be successfully grown in Wynad, an area of about two acres has been planted to these spices during 1950 and the performance of these is being studied.

(b) *Ginger:* Trials to determine the economic seed rate for ginger and the optimum season for planting have been initiated in 1950, and are in progress.

The variety of ginger 'Chernad', which is considered superior to the local ginger in trade circles, has been introduced and is being multiplied for future comparative trials with local ginger.

(c) *Turmeric:* Observational trials to compare 'bulbs' and 'fingers' as planting material and to determine the economic seed rate for turmeric have been started in 1950 and are in progress.

(4) *Root crops:* (a) *Tapioca:* Observational trials to determine the optimum spacing and the method of planting have been initiated.

Six varieties of tapioca have been introduced and the planting material of these are under multiplication for conducting comparative trials with the varieties already under cultivation in the tract, to select the varieties best suited for popularisation.

(b) *Sweet potato:* Four types of sweet potato have been isolated from the varieties grown locally. Five types of sweet potato have been introduced and multiplication of the planting material of these is in progress for future comparative trials with the four local types to select the types that merit popularisation.

(c) *Potato*: Observational trials with forty types of potato have been carried out to select the types best suited for cultivation in Wynad. All the types failed to show promise, as they were very severely affected by "ring disease".

(d) *Miscellaneous root crops*: Yam, colocasia, dioscorea, arrow-root, edible canna and koorkan (*Coleus parviflorus*) are under trial to study the performance of these and multiply material for distribution.

(5) *Pulse crops*: Trials to assess the suitability of pulse crops, like cowpea, horse gram, and red gram have been carried out, and it has been found cowpea types, 'New Era' and C. 521 are suited for cultivation in the dryland, either as a pure crop or as an inter-crop in young orange plantations during the South-West monsoon season. These two types have recorded about 150 lb. of seed per acre when grown as an inter crop. From trial of cowpea 'New Era' in high lying wetlands, which is neither too moist nor too dry, during January to May, it is found that this crop can be profitably grown as a catch crop, as an yield of about 2800 lb. of green pods per acre has been obtained within five months of sowing. Horsegram has been found to be suited for popularisation in the dryland, if sown early in September, with an yield of about 300 lb. per acre. It is found that it can be grown in rotation with tapioca after the latter is harvested in August. Attapadi redgram has been found suitable for Wynad and multiplication of the seed of this variety is in progress. This crop can be profitably grown, either as a pure crop or as an inter-crop in young orange and coffee plantations and also along with ginger.

(6) *Millets and other cereals*: Various millets and other cereals like ragi, cholam, cumbu, tenai, maize, barley, oats and wheat have been put under trial to determine those that can be grown with advantage in the tract. The trials have shown, that except ragi, no other crop is suited for large-scale cultivation in Wynad. Bulk selection from the local ragi has been made for multiplication as this variety is found to be superior to the strains Co. 1, Co. 4 and H. 22 in respect of yield and resistance to *Piricularia*.

(7) *Vegetables*: Various vegetables like brinjal, cucumber, snake-gourd, bitter gourd, ribbed gourd, pumpkin, ash gourd, beans, knol-khol, cabbage and cauliflower have been put under trial during different seasons to select the kinds best suited for cultivation. From a study of the performance of these vegetables, it has been found that snake gourd, bitter gourd, ribbed gourd, cucumber and amaranthus are suited for cultivation in the higher portions of wetlands or the lower portions of the drylands where there is facility for watering during the summer season, pumpkin, ash gourd, and brinjals are suitable for cultivation in the monsoon season; French beans during the latter half of the monsoon season and knol-khol during the cold weather season. Cabbage and cauliflower have not been found suited for extensive cultivation, due to the fact the plants do not form 'heads' or 'curds' properly.

Two outstanding types of brinjal, 'Wynad Giant White' and 'Wynad Giant Purple Streak' and one type of pumpkin 'Wynad Mammoth' have been selected from the local types and the seeds of these are being multiplied and distributed.

Perennial vegetables, chow-chow and *kovakkai* (*dondakkai*) have been found exceedingly suited for cultivation in Wynad.

(8) *Oil seed crops*: Trials have been carried out on the cultivation of ground-nut and gingelly, to find out if these crops are suited for the tract. It has been found that, while gingelly does not come up well, groundnut makes satisfactory growth and gives fairly economic yields. The latter has recorded an yield of 850 lbs. of pods per acre in the trial carried out in 1950.

(9) *Sugarcane*: Trials have been carried out on the cultivation of sugarcane from 1946; and it has been established that sugarcane, Co. 419 can be very profitably grown in highlying wetland which is not marshy, at well as in the lower portions of dryland along the margins of valleys under purely rainfed conditions. The crops grown in the wetland and dryland have recorded yields of 38 tons and 25 tons of sugarcane per acre, respectively. From monthly planting trials, it has been found that the optimum season for planting in the wetland is April-May and that for the dryland is May-June. The rainfed crop has to be retained in the field for about 18 months for satisfactory yield, while if the crop is planted in November-December and irrigated it gives satisfactory yield within twelve months of planting.

(10) *Plantation crops*: (a) *Coffee*: Arabica coffee selections resistant to leaf disease obtained from the Coffee Research Station, Balehannur have been planted in an area of one acre to study the performance of these and see if any of these selections prove suitable to Wynad. Trials have been initiated to study the economics of growing Robusta coffee as a pure plantation and as a mixed plantation with banana, orange and pepper.

(b) *Pepper*: Different varieties of pepper from Travancore have been introduced and these are being multiplied for comparative trials with the local varieties and to select those best suited for popularisation.

(ii) *Miscellaneous crops*: Plants of various economic crops, like arecanut, coconut, cacao, kola nut, lavender, scented geranium, eucalyptus, camphor, kapok, thin Napier grass etc. have been planted to study the performance of these and select those suited for extensive cultivation in Wynad.

(iii) *Livestock improvement*: With a view to upgrade the local milch cattle, a pure scindhi breeding bull is maintained at the Agricultural Research Station, and the local cows are being crossed by this bull. In addition, four scindhi cows are also being maintained at the station for rearing calves for distribution in the tract.

(iv) *Pisciculture*: Mirror carp has been introduced in the tank attached to the station in 1949, and these have grown very well and started breeding. It is proposed to distribute the fingerlings to the settlers for rearing in small ponds in their holdings.

Total expenditure and receipts of the Station: The total expenditure incurred by the Agricultural Department on the Scheme till the end of December 1950 is about Rs. 4,15,950/- . The total receipts of the station inclusive of the value of articles transferred to other stations is about Rs. 39,000/-

6, **Conclusion:** The scheme in general has benefited the tract to a great extent, particularly in respect of improved agriculture, better communications, medical aid and freedom from malaria. An area about 5,000 acres of dryland and about 600 acres of wetland lying uncultivated has been brought under cultivation resulting in considerably increased production of food and other crops.

Fungicides and Weedicides *

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Diseases of crops have been prevalent from ancient times. But the nature of the agents responsible for the causation of these diseases and the uses of chemicals for controlling them began to be understood only after the middle of the last century. The practice of certain vine growers whose vine yards were on the roadside, of sprinkling a mixture of lime and blue vitriol on the leaves and bunches to keep off thieves led to the discovery of one of the most widely-used and potent fungicides—Bordeaux mixture. To the French Professor, Millardet, is attributed the credit of observations on the effect of this practice on the control of the downy mildew which was causing heavy damage to vines and the formulation of Bordeaux mixture, about the year 1882. Millardet recognised that copper was the active agent in this mixture and not lime and this led to widespread trials with various other combinations of copper compounds. The prevalence of powdery mildew on grapes in America and its control by the use of sulphur led to the development of investigations on sulphur and its compounds as fungicides. From these early stages more detailed investigations on various substances containing copper and other heavy metals, compounds of sulphur and other organic substances have been in progress and much valuable information has accumulated to the advantage of the farmer and to the development of economic plant pathology. The results of all these investigations have shown that compounds of copper, sulphur and mercury have definite fungicidal values. Other metallic compounds also possess this property but their use is not practicable owing to the excessive cost of the fungicide. In recent years attention has been concentrated on the development of organic fungicides, as it is felt that the continued use of metallic fungicides may lead to accumulation of these metals in the soil from the fungicidal drip during spraying operations especially in perennial crops finally reaching toxic levels and becoming injurious to crops.

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