

## THE CHENA PROBLEM AND SOME SUGGESTIONS FOR ITS SOLUTION.

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In 1923, the Département of Agriculture drew the attention of Agriculturists to the serious problem which faced the future of Estate Agriculture on account of Soil Erosion. It was then indicated that the permanency of any agricultural industry in a hilly country depended upon a proper realization of the necessity for the preservation of the top soil and for the maintenance of its fertility. The efforts of the Department towards the solution of the problem of soil erosion have been fully recognised and strongly supported by a number of estate superintendents and agencies. The result has been that some agriculturists are to-day making endeavours upon their estates to stop the amount of soil erosion which is taking place and steps are also being taken in new clearings to check the extent of that erosion which inevitably occurs when new openings are made.

Another problem of considerable magnitude but nevertheless of equal importance to the Agriculture of Ceylon is the Chena problem. This system of agriculture is not peculiar to Ceylon, but is or has been common in most tropical lands in both hemispheres. It consists of growing quickly maturing crops in temporary clearings which are cut from the original or from secondary jungle. These clearings are burnt, sown broadcast with a mixture of crops, and after harvest are then abandoned to wild vegetation. New clearings are cut and burned for sowing for the next season. Sometimes two crops are taken from the same area but this only occurs when a south-west monsoon crop can be secured as well as the crop grown during the north-east monsoon. After land has been chenaed it is considered unfit for further cultivation until the jungle has grown. Periods extending from 6—12 years are considered necessary for the renewal of this fertility. Two or three successive chenas on the same land after an insufficient rest destroys the jungle's power of recuperation and trees are succeeded by grasses and woods and in some areas by lantana. A longer period of renewal is required after each successive burning and this means that the soil is gradually becoming less fertile. One has only to travel throughout the drier districts of the island to see the vast areas which are now covered not with even secondary forest growth but with lantana and illuk. When these areas are seen one realizes the damage that is being done by the chena system of agriculture. This process of denudation has only to go on long enough in any particular area with an increasing population to eventually bring the period of agricultural occupation to an end. There is evidence which clearly indicates that some of the old civilizations of the Central American area have died out, solely as the result of their dependence upon this primitive form of agriculture.

The chena system of agriculture over the course of centuries carries with it agencies of destruction and the process of destruction tends to increase as the population increases and the periods between successive chenas diminish. The decay of the population in the dry zone of Ceylon is still a puzzle, and although it has been suggested that it may have been

due to wars and to malaria, it may equally be suggested that it may have been the result of the non-existence of a permanent system of agriculture on the dry lands.

In some parts of Madras, more particularly in Malabar on the West coast the chena system of agriculture is still in vogue. Some of these lands as the result of constant burning and soil denudation are incapable of growing a single tree or shrub. One wonders how far many of the bare patna lands which exist on the hill slopes in Ceylon have been brought about by the chena system. I recently had the opportunity of travelling through the hill section of Assam and I was particularly struck by the thousands upon thousands of acres of land which no longer supported any tree growth and were covered with lantana or in some areas by a grass known as thatch-grass—the eradication of which has defied experiment. Similarly the vast stretches of illuk to be seen in the Eastern Province of Ceylon are the result of the chena system.

Only a small scattered population can secure permanent support from the chena system of agriculture. The fertility of the soil is renewed more slowly after each burning and how often the land can be cleared or how often the forest growth will renew itself must be determined by local conditions of soil and climate.

We are accustomed to look upon Ceylon soils as poor and in comparison with many virgin tropical soils they certainly are, but compared with soils in many parts of India—particularly in the South—they cannot be considered poor, and are undoubtedly suitable for permanent cultivation.

Any system of agriculture which does not maintain the fertility of the soil is bound to be nomadic and predatory and knowing as we do that the chena system results in a reduced fertility it makes it necessary for us in the interests of future generations to pause and take stock of the situation.

The Government in Ceylon has in the past endeavoured to regulate the chena system of agriculture and many Governments in India have endeavoured to do the same. Definite areas have been assigned for this form of agriculture and specific periods of rotation have been decided upon. In the past year or so there has been a tendency to be more liberal in the areas allowed, but the question arises whether the whole question should not be fully inquired into.

The ultimate result of this liberal allowance of chenas must be visualized and realized. I do not for a moment wish it to be understood that I consider it possible to stop chena cultivation. In many parts of the country this would be quite impossible and if attempted would result in the complete depopulation of these areas. In the North-Central Province, in Mullaitivu, and in the Hambantota district, to mention only a few, the continuation of chenas is necessary for the support of the village inhabitants. The villages in those areas are scattered over a large and sparsely populated area and within living memory nothing has been grown except chena crops and small paddy crops under village tanks. The villagers own only a small area of high land immediately around their dwelling houses and a small area of paddy land. It follows therefore that these villagers in many areas would be unable to live if all chena clearing was stopped. It is essential to allow chenas in these cases—in order to prevent starvation.

Chenas must be allowed to continue in such areas until a better system of agriculture can be evolved and adopted. Experience all over the world has shown that repression of the customs of a people cannot be effected and it is erroneous to believe that in Ceylon any number of fines or imprisonments will suppress the time-honoured chena habit. Our efforts must be directed towards evolving a better and more permanent system of agriculture and then of encouraging its adoption.

The system of agriculture which has replaced the chena system in all developed countries is tillage agriculture, in which ploughs and other implements are used for the preparation of the soil and for inter-cultivation during the period of growth of the crops. It has been urged frequently and upon several sides that Ceylon soils in the dry zone will not grow successive crops, but this has been definitely disproved in the many school gardens in dry areas and in the Hambantota district during the recent cotton experiments. During my recent visit to India I paid particular attention to this question and I am convinced that systematic dry land cultivation is as equally feasible in Ceylon as in the neighbouring continent.

In India, it is generally recognised that it takes about three times as much land under dry land cultivation to support a family as it does when crops are grown under irrigation. The area varies in different parts of the country. In Bombay 10 acres of well-irrigated land or 30 acres of dry land are considered to be an economic unit, whereas in Madras the areas are smaller.

Any holding for dry cultivation in the dry zone of Ceylon must therefore be of a fair size and it will require ploughs and cattle for its working.

The suggestion that villagers in the North-Central Province might be encouraged to depart from this chena cultivation and to take to regular systematic agriculture may appear to many to be Utopian, but such a change from the habits of a people from chena cultivation to plough cultivation has already been largely effected in the Chittagong Hill Tract of Eastern Bengal. There in a chenaed area—a system of plough leases have been in vogue since 1868. In that year one lease only was granted but in 1918 there were 42,667 acres in plough holdings. The adoption of such a system has to be very carefully thought out in order that it may be provided that the land remains in the hands of the cultivators. The extent of the leases should be limited and no such lease should be permitted except to residents in the neighbouring villages. The policy should aim at settling lands direct upon resident cultivators and not to allow such lands to fall into the hands of middlemen when the cultivators will become little better than labourers. Rules should also provide that lands cannot be sublet or transferred except on hereditary succession or with the consent of the Revenue Officers.

In Bengal it is recommended as the result of the most recent investigations that leases should be for 30 year periods renewable for similar periods and that for the first 3 years the land should be rent free. It is also necessary to recognise from the outset that such a system of permanent agriculture requires initial capital. This is required in the 2nd or

3rd year and the chena cultivator is not fitted by nature to raise it for himself. Unless such capital is forthcoming the villager cannot hope to undertake or to benefit from plough cultivation. I do not believe, under the conditions prevailing in the Ceylon villages in the dry zone, that cash loans are likely to be of as much benefit as advances made in kind. Advances of ploughs and of cattle by Government are required and these should remain the property of the Government until they have been paid for.

The first requisite is to endeavour to wean the village cultivator from the habit of shifting chenas. This might be done by the provision of lands—not on permit for chenas—but on lease for permanent cultivation. A small beginning has been made in this direction in the North-Central Province and in the Hambantota district there are several growers of cotton who are cultivating land for two years in succession and a further endeavour is being made this year to interest growers in the succession and rotation of crops by limiting the areas of new lands being made available for cotton.

If these leases are given, a chena crop would be grown the first year and in the second year a light digging and weeding with the mamoty would be necessary. In the third year the land should be made ready for the plough and it is at this time when advances through some financing agency is necessary. If satisfactory work is done, provision for an extension of the holding should be made. It should not be overlooked that under Ceylon conditions, the economic holding for a dry-land cultivation should not be less than 20 acres in extent. If the grower has also areas of paddy land, the area of dry land required for a suitable living would be less. Leases should therefore be given on such a plan that they may eventually be developed into economic holdings.

On the flat dry lands of the dry zone, I would therefore recommend the issue of plough leases as has been done in certain parts of India and I am confident that the inauguration of such a system would eventually tend to reduce the requirements for chenas and would lead to the establishment of residential holdings probably in the form of settlements. Such a scheme would also involve the provision of experimental farms in order to work out suitable rotations of crops. The establishment of a cattle breeding station for the cattle required and the inauguration of a financing and educational organization for the assistance of the lease-holders are necessary. Experimental Farms have been established in areas given to chenas in India and are giving satisfactory results. Amongst money crops, the Ceylon cultivator will have cotton, ground nuts, tobacco and gingelly and amongst food crops hill paddy, maize, millets, kurakkan, green gram, cowpeas, dhal and other pulses. Fodder will have to be grown for his cattle, but this will follow along the lines already adopted with success in India.

India produces a vast amount of its food stuffs by means of dry-land cultivation and there is no reason why Ceylon with its better rainfall should not do likewise. Experience during recent years indicates that successions of crops on dry lands are possible if the weed problem can be settled and this can only be met by dry-weather cultivation with tillage implements. Sir Marcus Fernando has on a previous occasion emphasized the need in

Ceylon for mixed farming. For a definite system of plough cultivation in the dry zone there is a great need and the adoption of such a system will help towards the settlement of the Island's Food Supply question.

The chena problem in the hill country is a much more difficult one. Here successive cultivation of food crops without terracing is only likely to lead to soil denudation and erosion. If terraces are formed continuous cultivation could be carried on and if these are impossible then the planting of such trees as jak or breadfruit should be insisted upon. Hill land if it is not to be permanently destroyed must be either terraced or grown in some permanent product. Jak offers considerable possibilities in some areas, but in others it may be necessary to insist upon terracing if regular cultivation of short-aged food crops is to be attempted.

In this paper I have not attempted to particularize as I recognise that each district will have to work out its own problems on the spot. I am however recommending to Government the establishment of typical dry-land holdings in the Hambantota district and in Vavuniya in connection with the endeavours to establish cotton cultivation. Here the Department will undertake experiments upon the crops that can be grown and ascertain their exact position in the rotation. The results of such experiments need not however be awaited, as there are I know in some areas a number of progressive cultivators who would be able to make good if they were provided with suitable lands. The officers of the Department of Agriculture would be only too willing to render every assistance in securing the settlement on the land of the proper type of cultivator. I therefore hope that this matter be considered in detail and a scheme of development decided upon.

#### DISCUSSION.

SIR MARCUS FERNANDO opened the discussion and said that before making any observations on the very interesting address they had just listened to, he would like to congratulate the Director of Agriculture for his courage in bringing up that very important subject to the forefront of the day's proceedings. There was a large body of people in this country who thought that chena cultivation was essential for the villager in dry areas, in order to get his food supply. The old system of chena cultivation was very much more widespread than even the Director of Agriculture told them that day. In Ceylon, with so many centuries of progress and civilization they were still carrying on primitive methods. Very recently, Mr Brayne, Government Agent, Eastern Province, sent a memorandum to the Forest Committee upon the great danger of the presence of illuk in that Province. The solution the Director of Agriculture proposed to this was the supplanting of this primitive method of chena cultivation by a more rational system. This was a very stupendous task. Unless they were prepared to make great sacrifices of time and money they would never solve the problem. The Department will have to find out which is the best way of dealing with each district. This is to say before the Department undertook to educate the villagers they will have to find out not only the best system that suits each district but also the best products to be grown in it. Sir Marcus emphasized the need for money crops. Villagers have realized the market value of cotton and that is why cotton cultivation

had become popular. He felt that cotton would grow in more districts than Hambantota. The perseverance and pains-taking efforts of the Agricultural Department would be able to solve the problem, provided they gave them the time and afforded them all the facilities from the legislature. After the 1919-20 famine they began to talk about food production, most of the discussion took place in terms of rice production only. It really was a limited way of dealing with the question of the food supply. As it is already known the extension of rice growing was a very difficult problem and an expensive problem too. There were some people who imagined that malaria could be combated by sending a malaria expert and a medical officer to the affected area—the essential factor of malaria reduction was the extermination of stagnating water. In Italy, the authorities had prohibited rice cultivation within 3 miles of a town. Wherever new land had been opened up with coconut malaria had become reduced. Take the case of Chilaw where the whole district was opened up with coconut. It was once a malarial district but now the death rate there is very low; people were prosperous, and also the whole place was largely populated. If they opened up these dry lands in dry areas the toll of malaria would be very much less. He hoped that the discussion that day would not end merely in academic form, but that something more practical would result therefrom, and that they would be able to get a practical scheme started in a very short time. He shuddered to suggest the appointment of a Select Committee because they were overwhelmed with Select Committees, but he felt confident that the Director of Agriculture with the help of his colleagues would be able to formulate a scheme which would be acceptable to Government and to the Legislature.

H. E. THE GOVERNOR :—I have here a communication from Mr. C. E. Corea. I think that this should be read.

The DIRECTOR OF AGRICULTURE then read Mr. Corea's communication which is as follows :—

The "Chena Problem" was shortly stated in a Sessional paper issued so far back as 1883 as follows: "Dry Cultivation is now more than ever a necessity for the existence of the people. It cannot be stopped without "causing great misery." Referring to attempts to suppress the habit by what the Hon. Mr. Feeman called "stem regulations," the writer stated that though after the order had been in operation for 10 or 15 years, it had been reported that chenas were stopped, the Blue books showed that "Chena Cultivation had never been even checked." "At the present moment" he said "competent authorities say it is increasing." The conclusion he arrived at was that by adopting a policy of repression which has to be periodically relaxed as when a year of drought spreads the alarm of famine "more harm is done than if the whole cultivation was legalised and systematically controlled." A Government Agent's Administration Report for 1924 states:—"Chena cultivation is an essential condition of primitive village life, and a liberal chena policy is necessary for the preservation of health and even existence. The undue restriction of chena cultivation can only result in the impoverishment and gradual extinction of villages. The setting apart of adequate chena reserves is not inconsistent with the conservation of

essential forest areas." These two official pronouncements carry a statement of the problem and its solution; namely the legalization of chena cultivation on *adequate* reserves specially set apart for the purpose. The question however is what is an *adequate* reserve? The Government Agent who spoke of the gradual extinction of villages testified to actual results in a very fertile province. It is no good reserving sufficient for, say 5 families now left in a village which once maintained and is capable of maintaining 100 families. Obviously provision must be made for posterity visualizing not a future of villages passing on to gradual extinction, but a future of healthy and vigorous expansion. In 1897, the Government stated to the Secretary of State its policy in enacting the Waste Lands Ordinance to be as follows:—"The intention is to proclaim the lands intended for village reserves, to dispose of all individual and exclusive claims and then..... to place the lands necessary for the communal use of the villager under protection.....the object is really to enable Government to protect the villager from himself, from his own recklessness and want of foresight, to guard him from the devices of unprincipled speculators and render it certain that communal rights—rights absolutely essential to the well-being of the community—are handed down unimpaired to posterity." It must be plain to any one who knows anything of village conditions in the Island, of the needs and the rights of the peasantry, that the above is an absolutely sound policy—indeed the only sound policy that can be conceived. But when, in January 1926, an unofficial member asked in the Legislative Council "Will Government be pleased to declare its policy *re* grant of chena lands?" the answer disclosed the disquieting fact that Government to-day is entirely ignorant of the existence of *rights*, "rights absolutely necessary to the well-being of the community" and in that ignorance is obliged to resort to eleemosynary expedients to avert distress and tide villages over the usual periods of scarcity. The whole answer shows that the Government is carrying on just that "Policy" which was condemned by an expert so far back as 1883. It is stated that even these charitable doles to avert distress in periods of scarcity are dispensed in a niggardly spirit, caution being alleged to be necessary for 5 given reasons. These alleged grounds for caution call for scrutiny.

(a) "The circumscription of land available for food supply in future years." There will be no such circumscription if the reserve is adequate. Here again it is a question of rights which existed. What the reserve should be must not be left to the individual opinion of this official or that. The Hon. Mr. Freeman said that there are "Anti-kurakkan" Government Agents. The estimates of such cannot but be misleading. In 1883, Mr. F. D'A. Vincent, the Forest Expert, stated, after wide investigation all over the Island, that "the area of appurtenance was always in proportion to the extent of paddy land." The village reserve is always appurtenant to paddy land. The obvious thing is to ascertain the historical extent of the appurtenance.

(b) "By chenaing, lands are rendered permanently useless." There is much difference of opinion on this point. The Government Agent of the Eastern Province states that in the Batticaloa District "half the land chenaed does not grow up again into jungle that can again be chenaed."

There are no doubt such lands in other dry areas. This is a matter for the Agricultural Department to take up. I am inclined to believe that this happens when a chena is abandoned after one crop of an exhausting nature such as kurakkan or gingelly. The "native habit" which was weaned out of villagers by chena permits restricted to one year was to grow a succession of crops, alternating fine grains with leguminous products such as green peas. And there was also the cassava and other yam cultivations which helped to aerate the soil. Mr. Christie, one time European Planting Member of Council, speaking from personal experience said "From an agricultural point of view I maintain that it (chena cultivation) is not a wasteful system. The land is able to recover. Tea planters find that chena lands cleared for many generations grow some of the best tea in the Island." In the Chilaw District, old planters of coconuts always gave over the land to villagers to be chenaed during the first five years. In the Maravila-Mudukatuva Estate, *facile princeps* among coconut estates, I own topes which were planted on chena, on planting agreements given in 1806. The trees are still "going strong." In the village Nariagama, 7 miles from Chilaw, which was settled from chena cultivation after a case under the Old Forest Ordinance, I found, when I inspected the village in 1894 for the purposes of the case as proctor for the claimants, lands which had been chenaed for hundreds of generations, as was proved in the case, in a state of luxuriant jungle growth of all ages. The lands had been previously chenaed, according to "native custom," for a succession of crops. Since about 1900 the villagers were restricted to the one year system with the result that the chenaes have become *deniyas* on which vegetation is extremely slow. As part of chena control, rotation of crops for a stated number of years, under instructions from a competent official of the Agricultural Department, may be made a condition of all chena permits, wherever practicable.

(c) "The neglect of paddy cultivation, as has happened from past experience." Villagers do not as a rule prefer kurakkan to rice. Paddy cultivation will never be given up for chena, when the necessary facilities for the former are present. It is only "hindrances" to field culture, that lead to the abandonment of paddy in pursuit of other methods of getting food. These hindrances are well known: lack of cattle, failure of elas and other irrigation streams; and the want of seed paddy.

(d) "The encroachment of forests." The necessity for encroachment on forests will be removed by the provision of *adequate* chena reserves.

(e) "The drying up of springs and watercourses." This is a sin of "estate products" which ought not to be visited on chena cultivation. The Surveyor-General and the Director of Irrigation issued a joint report about 5 years ago, on the question of the drying up of springs, in which they said: "There is no doubt and we do not think it will be disputed that those areas which have been alienated in Ceylon catchment areas and which have been opened up as tea and rubber have caused considerable soil erosion. . . . In the case of forests which have been chenaed we are not in a position to make any such definite statement: it is conceivable to us that abandoned chenaes might form an equally good, if not better, protection to the soil than the forests which they have replaced.

If, as has been officially stated, "Chena cultivation an essential condition of primitive village life and is necessary for the preservation of health and even existence" and if "restriction of chena cultivation can only result in the impoverishment and gradual extinction of villages." all other considerations must give way. The claims of the peasants cannot, with safety, be subordinated to the claims of the planters. Communal products, tea, rubber, and coconuts, must not be considered above the food supply of the people. No land should be sold or granted for the former, whether to form large estates or small holdings, until the communal necessities for food are provided for by "adequate reserves." This was in fact the considered advice given to Government by the Forest Expert Mr. Vincent in 1882. He said : "In the first place, no forest land should be sold until we have decided what to keep as reserves."

The HON. MR. W. A. DE SILVA in the course of his remarks made references to his experience with chena cultivation in the North-Central Province. During bygone days cultivation on dry lands was the most predominant form of cultivation. The best rice was grown on high land. At festivals they had always used high-land rice (elwi). He did not think that land was abandoned on account of chena cultivation. He thought it inadmissible to impose any restrictions on the villagers, who were a backward and physically weak lot. They will have to introduce new methods gradually. Mr. de Silva said that mangos would do very well as a permanent crop on dry land. He had a plot of land on his estate in Anuradhapura cultivated over and over again by the villagers. This was overgrown so much with weeds that they found it insurmountable to eradicate them. In conclusion he said that the scheme proposed by the Director of Agriculture should receive their hearty support.

MR. A. A. WICKREMASINGHE said that the solution of the chena problem hinged on a few remarks of H. E. the Governor when he was heard to say that it was the intention of Government to make Crown lands into permanent peasant proprietors' allotments. He suggested that certain lands be offered to the villagers for a nominal payment of rent, say for a period of 25 years, and that the lands may be given to them, and that they be asked to establish such lands into permanent settlements within that period. He felt such a scheme would solve the whole problem. Mr. Wickremasinghe went on to say that he disputed the rights of the Crown to some of the chena lands in the Island. Another important matter which he thought should be achieved in this direction was that in village schools the sons of the peasants should be taught how to cultivate his lands scientifically and if a thoroughly agricultural education is imparted to the villager he will find that he will be able to understand the improved methods as taught by the Department. He advocated the introduction of agricultural education in the curriculum of the village schools and he thought that much will be done in the direction for the permanent production of food in this Island.

MUDALIYAR E. F. EDIRISINGHE in the course of his remarks gave a brief review of the 3 Divisions of the Nuwara Eliya District, *viz.*, in Kotmale the people were prosperous and chenas were little, in Uda

Hewaheta the chenas were an increase over Kotmale, and in Walapane he said that there were 2,000 acres brought under chena cultivation. From these illustrations he said one would infer that because in Kotmale the pioneer planters opened the country with tea and as there were roads and other means of communication chenas did not exist; in Uda Hewaheta too a few estates had sprung up and as a result of the country being opened up with roads, chenas were diminishing. But as Walapane is not so advanced, he asked that Government should give lands to capitalists so that they may open up the country and thereby offer facilities for the existing chena cultivators to improve their condition. In concluding his remarks he said that conjoint reports be asked for the improvement of the economic conditions of the colony from the Director of Agriculture, the Director of Public Works and the Director of Irrigation. These proposals should formulate a scheme of food production which will eventually help to solve the chena problem.

HIS EXCELLENCY THE GOVERNOR in concluding the discussion stated that he was glad to note that there was a general agreement that a more permanent system of cultivation was desirable and that he was pleased to note that Mr. Corea agreed with the Director of Agriculture in the necessity for a suitable rotation of crops.

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### **COTTON CULTIVATION IN THE HAMBANTOTA DISTRICT AND ITS PLACE IN A ROTATION FOR DRY ZONE AGRICULTURE.**

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The earliest attempts at Cotton Cultivation in the Hambantota District were, I believe, made by the Ceylon Agricultural Society. In 1912, the Society opened a four-acre Demonstration Garden at Ambalantota, and Allen's Long Staple Upland was grown in a plot of  $1\frac{3}{4}$  acres, which yielded at the rate of 1,043 lb. of good seed cotton per acre in the first year.

This success resulted in a Village Cotton Growing Scheme being started on a small scale with 30 acres in Magam and East Giruwa Pattus during the season 1913-14.

Unfortunately the Great War intervened, and with the consequent departure of the Local Agents for the British Cotton Growing Association—Messrs. Freudenberg & Co., this Cotton Growing Scheme which might have prospered had to be dropped.

The present Department of Agriculture began to give serious attention to Cotton investigation work in 1921 when an Experiment Station of 54 acres was opened at Ambalantota, for varietal tests and other trials.