

Tungabhadra Project  
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by T.N.S. Raghavan.

**TUNGABHADRA PROJECT**  
**LOW LEVEL CANAL SCHEME**  
**REPORT ON LABOUR AND**  
**BETTERMENT CONTRIBUTION**  
**PROBLEMS**

BY

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## TUNGABHADRA PROJECT

### REPORT ON LABOUR AND BETTERMENT CONTRIBUTION PROBLEMS

In G.O. No. 13 Ms., Public Works, dated 3rd January 1945, the Government have directed that I should consider the problem of recolonizing the project area in view of the impending change from "dry" land economy to "wet" land economy and also investigate into questions such as water-rates, inclusion fees, etc. This report deals with the problem of what will probably be the greatest difficulty to be faced when the project comes into operation, namely, the additional labour requirements under irrigated conditions and suggests a means of utilising the principle of betterment contribution to increase the population of the tract. Special legislation will be needed to give effect to the proposals.

2. The Low Level Canal Scheme is estimated to cost Rs. 10 crores and is estimated to provide irrigation for about 3 lakhs acres. The irrigation will be mainly for 'dry' crops and making some allowance for the irrigation that may be provided for wet and garden crops, the estimated ayacut may be treated as equivalent to roughly  $3\frac{1}{2}$  lakhs acres of irrigated "dry." Ordinarily the actual cost of any project will be considerably in excess of the estimate, but as the war is now over and prices of materials will tend to go down, it may be assumed that the estimate of Rs. 10 crores for this project will not be exceeded. Even with this assumption, the cost of providing dry irrigation for one acre works out to something like Rs. 300 an acre and such expenditure is hardly justified if all that is achieved thereby is the saving of a dry crop in years of deficient rainfall. Assuming that the rains fail once in three years, the interest on Rs. 300 together with the maintenance and collection charges and the additional expenditure to be incurred on overhead establishment, malaria-control, etc., will work out to something like Rs. 30-32 an acre in three years. For saving a dry crop once in three years the ryots cannot afford to pay more than a water-cess of say, Rs. 3 every year and the general tax-payer will therefore be called upon to spend Rs. 21-23 an acre for saving a crop which, with normal prices, will not be worth this amount. It would be a much easier and cheaper proposition to give a bonus of say Rs. 15 an acre in respect of every acre in the ayacut whenever the rains fail and the ryots would be doubly thankful, first for the bonus and next for the water rate saved. The whole question has, if I may say so with respect, been very cogently argued in the minutes of the meeting of the Irrigation Development Board held on 6th July 1938 and the Board comes to the conclusion that "the natural desire to protect the maximum area commandable at a price which the ryot can pay from the crops which he now grows, can only result

in stalemate. It is therefore of the opinion that the problem should be viewed from another angle and the aim should be to produce a commercial proposition which would incidentally be famine-protective." These remarks were made with reference to a scheme which would have had more 'protective' value than the scheme as now sanctioned, for as I have pointed out already the area served by the Low Level Canal Scheme is not the part of the Ceded districts most liable to famine. The Tungabhadra Project cannot in any case be remunerative in the ordinary sense but it would be a complete failure from any point of view if it does not at least ensure that the water provided at such great cost is put to beneficial use so as to increase the total production of the project area and the standard of living of the people in it.

3. (i) I have dealt in a previous report with the importance of selecting the crops to be grown so as to make it more likely that the ryots will actually use water, but this is not sufficient unless the project area has the resources required to derive the benefits which irrigation can confer. The most important of these requirements is human material. The project area is very sparsely populated—vide figures below:—

Taluk.	Population per square mile, (Census of 1941).	Taluk.	Population per square mile, (Census of 1941).
1. Hospet*	142	5. Adoni *	217
2. Siruguppa	172	6. Kurnool *	206
3. Bellary*	148	7. Fatihkonda	150
4. Alur	182		

\* Excluding Municipalities.

Even under the present dry conditions the ryots bestow most of their attention on lands round about the village-sites, the cultivation of the more distant lands being of the most casual nature. Taking one labourer working for one day as a unit, it has been estimated by the Agronomist in charge of the Siruguppa Farm that on the average 5 men-units and 8 women-units are required for raising a purely dry crop on one acre while the cultivation of an irrigated dry crop requires 25 men-units and 45 women-units per acre. I have gone through various cultivation sheets maintained in the Siruguppa Farm and made all possible allowances for economies that could be effected when crops are grown on a field-scale; but I find that in many cases, for example, cotton, the labour requirements under irrigation would, in fact, be larger than those estimated by the Agronomist. Cultivation under ryots' conditions may not be so intensive as in the Siruguppa Farm, but at a conservative estimate, at least three times the labour force now employed on a given area would be necessary if that area is to be irrigated. If, therefore about one-third of the lands in the project area are to be irrigated, the total labour requirements of the area would be increased by 66 per cent. This is a hard cold fact which has to be

taken into account in considering the question of development of irrigation under the project.

(ii) A Ryots' Agricultural Farm has recently been opened at Bhagawadi near Siruguppa to test the 'psychology, stamina and intelligence of the ryots.' The farm consists of about 175 acres surrounded on all sides by dry villages and water is given free; yet only 45 acres were irrigated in fasli 1354 and about 75 acres in the current fasli and one of the standing complaints of the ryots to every visiting officer is inadequacy of labour. In the Nizamsagar area in Hyderabad, the population was about 240-250 per square mile when the project was commenced and the people were used to irrigation as there were a large number of tanks before the construction of the dam. Even so, development was very slow and there were large-scale relinquishments so that the Hyderabad Government found it necessary for some time to bring families from outside and to settle them in the area. About 1,500 families were so settled within a period of about three years, although the scheme was suspended from fasli 1353. Irrigation under the Kurnool-Cuddapah canal is mostly in a narrow strip running through eight taluks and seventy-five years have elapsed after the canal was completed. Scarcity of labour is still a serious difficulty in the area and what the difficulties are likely to be under the Tungabhadra Project when three times the ayacut is confined to an area most of which lies in four taluks (Siruguppa, Adoni, Kurnool and Bellary) can be easily imagined. Very little can be done by introducing agricultural machinery, for agricultural practices in South India are not sufficiently advanced for the purpose and there is the fact that dry crop irrigation does not easily lend itself to large-scale farming. The natural increase of population will take several decades, perhaps centuries, to make itself felt. Delay in development means a corresponding increase in the real cost of the project and in order to ensure fairly quick development, it is necessary to bring about a considerable increase in the population of the tract simultaneously with the advent of the project.

4. The problem is therefore one of attracting to the project area labourers and small cultivating ryots from outside. It is not to be expected that the mere wages which could be earned as labourers would be sufficient attraction to outsiders particularly when allowance is made for the general unhealthiness of the project area and the disinclination of the ordinary villager to move very far away from his native village. The desire to call a small bit of land his own is however one that is deeply ingrained in the average villager and the prospects of getting a large immigrant population to settle down in the project area would be much greater if comparatively small extents of land in the area could be offered to immigrants. The land required for the purpose must necessarily come out of existing holdings and the Government cannot afford to pay for them as that would mean that the cost of the project would go up further. The project area is made up of comparatively large holdings and about half the area is owned by persons holding more than 20 acres

each (vide Appendix II). Large holdings in the possession of a comparatively small number of agriculturists is a factor which would seriously retard development as it would be impossible for the larger landholders to bring under irrigation within a reasonable time all the extents for which irrigation may be made available. It would be an advantage to them to have the size of their holdings reduced so as to enable them to concentrate their available resources on the development of a smaller area. My proposal is that the principle of betterment contribution should be utilized so as to bring about a reduction in the size of the larger holdings on the one hand, and to find the lands to be offered to outsiders on the other.

5. During my examination before the Rayalaseema Co-operative Enquiry Committee, Sir, N. Gopalaswami Ayyangar suggested that it might be possible to attract outsiders without necessarily taking away land from the existing owners. The scheme suggested was one of collective farming of comparatively large extents of land, the existing owners being paid merely the interest on their market value and the profits, after paying wages at current rates and meeting other cultivation expenses, being shared by the actual workers including the immigrants into the project area from outside. The views I expressed were: (1) that not to allow a person to develop his own property and derive a profit therefrom was a revolutionary idea; (2) that one was more likely to put forth his best efforts if he could enjoy the fruits of his own labour and that individual effort would be at a discount where one is lost in a crowd; (3) that the irrigation for dry crops is of such a nature that large-scale farming is difficult, if not impossible; and (4) that after the interest is paid to the landholder, there would be practically no profits to be shared. The last point perhaps requires a little elaboration. The interest might be calculated either on the "dry" value of the land or on its value as irrigable land. If the latter, the market value is likely to be the capitalized value of the net profits, i.e., the net profits would be more or less equal to the interest on the capitalized value, and nothing would be left after the interest is paid. If on the other hand, interest on only dry value is to be paid to the owner, a net profit is theoretically possible, but allowance has to be made for the fact that no one will have a personal interest in seeing that there is a profit and that there will be fairly heavy overhead charges to be incurred. Moreover, dry irrigation is so difficult that it might enable a cultivator to make a living but if labour charges at so much per day are deducted and paid out, then and there, the result when the harvest is made and the crop sold, might well be a deficit and the profit-sharing labourer will, if anything, be worse off than if he were a mere labourer with no interest at all in the profits. There is also no objection of a different kind, viz., that the system would cause hardship to the smaller landholder who may have no land outside the area selected for collective farming. For instance, 5 acres of comparatively poor land worth, say, Rs. 50 an acre, may not ordinarily yield any profits worth speaking of, but would enable a small family to make a bare living. Three acres under cholam

would give the grain required for the family and some fodder for cattle and 2 acres under cotton would give the money required to pay the assessment and to meet the other petty needs of the family. If interest at say 4 per cent on Rs. 250, i.e., Rs. 10 per year, is paid to the ryot and he is asked to give up his land, the Government have deprived him of his means of livelihood in the process. True, the family may earn wages at the collective farms, but the ryot may with reason complain against a humble but independent and self-respecting family being converted into labourers with a share in highly doubtful profits. I consider that collective farming on a large scale in the project area, is impracticable and may sometimes be inequitable and the ryots are generally not in favour of it for any kind of crops. I am inclined to think, however, that where substantial profits are more or less assured by large-scale farming (for example paddy cultivation), collective farming is worth a trial, provided care is taken to avoid hardship of the kind mentioned; and I am proposing below that it should be tried in respect of a certain class of irrigated lands after largely extinguishing private ownership in it.

6. The principle involved in levying a betterment contribution is quite simple. It is merely that when the Government or a public body incurs a definite expenditure as a result of which a restricted but well-defined class of persons get a clear and unmistakable increase in the capital value of some property, it is fair to the community as a whole, that the persons directly benefited should make a special contribution to meet the expenditure involved. This is what the Economist Dr. Rosewater says about it:—

“Special assessment undoubtedly transforms a certain part of the enhancement of land values from an unearned increment into an earned increment. It does this at the very time that the benefit arises, thus avoiding every taint of confiscation of vested interests. Through it may be secured, the chief advantages of the appropriation of the future unearned increment, without destroying the healthful stimulus arising from the private ownership of landed property. The total increase is seldom appropriated, but only so much as is required to defray that share of the cost of the particular improvement which may represent the special benefit conferred. We have here no uncharitable begrudging of all rise in value due to conditions other than those created by the party who reaps the advantage. All that is demanded is that when a person secures an enrichment to his estate, and the expense, if not borne by him must be borne by someone else—in this instance, the tax-paying public—he shall make compensation therefor. This is the true equitable principle. The contributor pays not alone because he obtains a benefit, but because that benefit is joined to an expense the burden of which finds a fitter resting place upon his shoulders than upon the shoulders of others not specially benefited.”

The principle is part of the taxation systems of the United States of America, England and some continental countries. The construction of a new irrigation project is a clear case in which a “betterment contribution” is justified; for there is a definite accretion to



the capital value of the lands irrigated by the project and the fortunate owners of the lands get an "unearned increment" pure and simple, as a direct result of the supply of water, which can be easily distinguished from any further increase in the value that may be brought about by reclamation, building up of soil fertility, etc. The system of levying a contribution from the owners of lands benefited by a new irrigation work, over and above the increase in the assessment payable from year to year, has been in force in Mysore for over fifty years, the contribution varying from one-fifth to one-third of the difference between the value of dry and wet lands in the locality. In Madras, discussions in regard to a "betterment" or "inclusion" fee have been going on for about thirty years and it is unnecessary to refer to them here. It is sufficient to say that the Government ordered in 1920 the levy of an "inclusion fee" in respect of certain lands included in the wet ayacuts in the Godavari and Kistna deltas, though the collection is now being postponed from year to year and in 1941 they accepted the view of the Board of Revenue that the levy of betterment fees might be considered under new schemes of irrigation. More recently, the Hyderabad Government has made a proposal that under the Tungabhadra Project, the owners of the irrigated lands should, subject to certain exemptions, be required to pay a premium fee of Rs. 50 per acre in instalments or to surrender land in accordance with a graduated scale depending on the extent for which a ryot gets irrigation. I consider that in the Tungabhadra Project area, the principle of levying from the more well-to-do ryots, a betterment fee in kind, i.e., of requiring them to surrender portions of their holdings in exchange for the irrigation given to the other irrigable lands in the holdings should be introduced mainly for the purpose of increasing the man-power in the area by offering the surrendered lands to outsiders.

7. During my tours the question has been very frequently asked why a betterment fee, whether in money or in kind, should be levied under this project when a similar levy has not been made under other major systems of irrigation. We are living in a world of flux and ideas of equitable taxation are rapidly changing. The mere fact that a certain kind of tax was not imposed in the middle of the 19th century is no reason at all why it should not be imposed in the middle of 20th century. Apart from this and the need for rapid development pointed out above, there are, in my opinion, at least two good reasons why there is a case on merits for distinguishing this project from others: (1) The other major systems of irrigation in the province are highly remunerative and the general tax-payer is not asked to bear any special burden on their account. The Tungabhadra Project, however, is so expensive and the water-rates that would be necessary to secure even, say, a return of 2 per cent on its cost so prohibitive, that the ryots may, in return for water-rates which would not be too oppressive in normal years and in view of the accretion to the capital value of their lands, make at least a part contribution to the cost of the project, so as to reduce the burden on the general tax-payer. (2) As already pointed out, the bulk of the project area is

held in large holdings by a comparatively small number of ryots. Without a betterment fee, therefore, the general tax-payer would be making large presents of "unearned increments" to a number of persons who will be members of a "rentier" class if they are not so already and it is against public policy that taxes collected from a large number of comparatively poor persons, should be utilized to benefit a small number of well-to-do persons. (I have given reasons in my reference C. No. 57/45, dated the 6th July 1945, why a scheme of limiting the extent for which a landholder might be given irrigation would not be suitable in the project area.)

8. Representations have sometimes been made to me that surrender of land should be an alternative to the payment of betterment fees in money in accordance with a scale to be prescribed. Land values vary widely in different villages and any scale of fees cannot be altogether equal in incidence in different villages, whereas surrender of land automatically allows for local variations in prices, varying soil fertility, etc. Apart from this, I consider that an alternative scheme such as that suggested, would not be in the best interests of the ryots of the locality. The representations referred to have invariably come from the business community owning large extents of land or from the money-lending class of ryots. It will no doubt be easy for them to make a contribution for betterment in money, but the average ryot has no money to spare and the "unearned increment" is not realizable until the land is sold. The small ryot loves his land and if he is given the option, his inclination will be to stick to his land, with no proper appreciation of the difficulties of development, and to go to the money-lender for the betterment fees to be paid (whether in lump sum or in instalments) and the combined effect of a larger debt, water cess on a larger area and inadequate labour will be that many of them will be dispossessed of their lands. Moreover, every ryot, whether big or small, will need all the money he can lay his hands on in the earlier years of the project to make his lands fit for irrigation and to meet the increased cultivation expenses under irrigated conditions. It will be several years before an appreciable surplus of money, as a result of irrigation, becomes common and the taking away of money in the earlier years will only retard development; reducing the size of the holdings would, on the other hand, facilitate development. Also, the persons who can afford to pay in money are precisely those whose holdings it is desirable to reduce, in order to secure a wider distribution of the benefits of irrigation. I therefore propose that contribution for betterment should always be made in the shape of land except in stray cases referred to below where payment in money may be allowed in order to avoid the surrender of petty extents which it would be difficult to consolidate.

9. Another question of principle may also be considered here and that is how far the Government are justified in compelling a ryot to accept irrigation for certain lands and to surrender a portion of his holding in accordance with a prescribed scale. The proposals I am making below would involve the giving up of only a portion of

the increased value conferred on lands by the supply of water for irrigation, but this is not a sufficient answer if a ryot does not believe in irrigation at all, particularly irrigation for dry crops. In the interests of development, however, the Government cannot allow islands of unirrigated lands in blocks which have been selected for irrigation. This would mean that water will have to be spread over a larger area and the localization of ayacuts itself will be impossible if it is left open to an indefinite number of ryots to refuse to take water. If, therefore, a ryot insists on keeping an irrigable land as dry, it is not unfair to say to him in effect "You are entitled to your opinion about the value of irrigation, but we cannot allow that opinion to affect the larger interests of the community. As you insist on keeping your land as dry, we shall acquire it as dry land and you may invest the compensation in some other area where there is no question of irrigation." I therefore propose that the legislation on the subject should contain a specific provision that where a ryot is unwilling to accept irrigation on the terms proposed, so much of his holding as is included in any irrigable ayacut in the project area, may be acquired and the compensation payable therefor shall be at the rates applicable to dry lands in the locality on the date on which the legislation is passed. A ryot cannot accept irrigation for some fields and refuse it for others; he must either accept all the irrigation he gets or have all the irrigable lands in his holding acquired.

10. Before coming to the actual proportions of surrender in respect of different lands, it is desirable to indicate the circumstances in which ryots will be called upon to make the surrender. If irrigation is allowed to develop of its own accord without any directive control by the Government, irrigation for wet crops such as sugarcane, paddy, etc., garden crops such as chillies, onions, vegetables, etc., and dry crops such as groundnut, cholam, cotton, etc., interspersed with unirrigated land, would all be jumbled together in the same block; this would lead to considerable wastage of water and it would be impossible for the irrigation channels to carry water at specific duties in different seasons or for any channels to be kept dry at specified intervals in the interests of malaria control. Nor can a system of surrender of land be worked if the land the kind of irrigation in respect of which the surrender is to be made is not definitely known. Localization of the ayacuts under different crops should therefore be completed before the project actually comes into operation. The actual extents for which each ryot gets irrigation would be worked out separately for wet, garden and dry crops and the ryot would be required to make the surrender just when the water becomes available for irrigation, i.e., before he has acquired any vested right to irrigate any land and as a condition of such irrigation being allowed. The surrender will ordinarily be of portions of lands included in the proposed ayacuts, but the lands themselves will be in their ordinary dry condition and any reclamation needed to make them fit to receive water for irrigation will not have been done. In these circumstances, it is clear that what the ryot surrenders will be dry land pure and simple in every case and if the surrender

is to bear any relation to the actual benefits which the ryots will derive, by allowing water for different crops (namely, perennial, wet, garden and dry), the proportion of surrender will have to be different for different kinds of irrigation. For instance, two blocks, say A and B may adjoin one another and in their dry condition may be of equal fertility and of equal value, say, Rs. 50 an acre. Block A may be selected for perennial wet irrigation and block B for mungari dry irrigation. If one ryot owns four acres in block A and another ryot four acres in block B and each is required to surrender one acre, the result will be as follows: Each ryot has given up land worth Rs. 50 but the first ryot can grow sugarcane and paddy in rotation on three acres while the second gets only mungari irrigation on three acres. It is obvious that the first ryot has derived very much more benefit from the project than the second. He will consume very much more water and the increase in the market value of his lands will be very much greater. If the same proportion of surrender is adopted for the two lands, the second ryot has a legitimate grievance that what he is called upon to surrender is excessive as compared with the first ryot and the ryots with such a grievance will be the most numerous as the project is mainly for the irrigation of dry crops. If therefore a system of surrender of land is to be worked equitably between different ryots, the proportion of surrender must be greater in respect of the lands given irrigation for the more valuable crops. This corresponds to the higher betterment fee which would naturally be fixed if the betterment contribution were levied in money. Apart from the question of equity considered above, there is a practical reason why a larger proportion of surrender in respect of the more valuable types of irrigation is desirable. The extent under the more intensive types of irrigation that would be allowed under the project is comparatively small and in order to avoid wastage of water, compact blocks will have to be selected for such irrigation. The result will be that all the intensive irrigation in the project will be monopolised by a comparatively small number of ryots. A larger proportion of surrender will bring about a wider distribution of the benefits of such irrigation as the surrendered portions can be made available on suitable terms to those persons who do not own lands in the blocks selected.

11. For the purpose of working out a scale of surrender for different classes of land, it is necessary to form some estimate of the increase in the capital value of the lands resulting from wet, garden and dry irrigation. This is rather difficult because there is very little wet or dry irrigation in the area commanded by the Tungabhadra project. All that is possible is to draw some general inferences from the meagre information available for a few villages in the project area, or near it. I give in Appendix I, a statement showing (1) the average values of wet, irrigated dry and pure dry lands as gathered from registration statistics, separately for the war and pre-war years, classified under the headings good, ordinary and poor, in six villages in which the economics of dry crop irrigation are being studied by my staff; (2) similar registration figures for

one village in the Kurnool-Cuddapah canal area in Nandikotkur taluk, classified under slightly different headings; (3) average value of wet lands irrigated by the Tungabhadra and Chickkahagari channels and the value of dry lands as estimated after detailed inspection and enquiry by the special Land Acquisition staff in 1942, in a few villages in the reservoir area in which such irrigation exists. The figures can be better appreciated with some indication of the kind of irrigation in each of the villages. In Genekihal and Belegal villages, the irrigation is from wells and the ryots have to incur very large expenditure in lifting the water for irrigation. The range of increase in market values will be much higher if the irrigation is by flow from channels running close to the lands. In Moka, the irrigation is from the Hagari spring channels and the ryots have to incur considerable expenditure in digging and maintaining the channels, particularly in the beginning of the cultivating season and after the periodical floods. The supply is precarious and many fields though classified as wet, are, in fact, cultivated with dry crops such as cotton, chillies, vegetables, etc. The value of wet lands in comparison with dry in this village is therefore not so great as it is in Daroji, where the irrigation is under the big Public Works Department tank. In Bannur, the comparison is in respect of irrigable dry lands under the Kurnool-Cuddapah canal. The ryots do not take water every year but only in seasons of deficient rainfall. With the more intensive system of cultivation and larger profits that would prevail if ryots are required to take water systematically, a higher range of increase in land values may be expected under the Tungabhadra project. The irrigation in the villages in the reservoir area shown in Statement 3 of the Appendix would correspond most approximately to the irrigation for wet and perennial crops under the project conditions and though some part of the high value of wet lands may be due to ryots' improvements and the building up of soil fertility, there is no doubt that the unearned increment in the case of lands given water for such irrigation will be very large indeed. On the whole, it would not be too much to say that with moderate water-rates, the values of dry lands for which water is given for the systematic irrigation of dry crops would be doubled and the value of lands for which an assured supply of water is given for perennial crops such as sugarcane and paddy would be at least quadrupled, merely as a result of the supply of water.

12. (i) According to the cropping scheme recommended by me in my Ref. C. No. 16/46, dated 21st January 1946, there are the following classes of lands to be dealt with:—

(a) Lands under sugarcane-paddy (long-duration) rotation in the perennial reach;

(b) perennial garden in the perennial reach;

(c) lands under short-duration paddy-cotton rotation in the perennial reach;

(d) lands under long-duration paddy-cotton rotation in the non-perennial reach;

(e) garden lands given water for eight months in the non-perennial reach;

(f) lands given dry irrigation in the mungari season in both reaches; and

(g) lands given systematic irrigation in alternate years in the hingari season with protection for a dry crop when not eligible for systematic irrigation—in both reaches.

Item (f) may be taken as the "yard-stick". Mr. Thirumalai Ayyangar proposes that when a money fee is not collected, one acre of land should be surrendered for every acre of irrigation. Considering the general attitude of the ryots in regard to dry crop irrigation and the difficulties of such irrigation which I have mentioned already in my previous report, I doubt whether such a high proportion of surrender is justified or will be acceptable to the ryots in respect of lands given merely mungari irrigation. I recommend that subject to the exemptions dealt with below, the proportion of surrender for these lands should be one acre in four; that is if when the ayacut is fixed, a ryot gets four acres of mungari irrigation, he should retain three acres and surrender the fourth. Assuming that dry land is worth Rs. 50 an acre and its value is doubled by irrigation as indicated above, a ryot would get an increase of Rs. 50 an acre and its value is doubled by irrigation as indicated above, a ryot would get an increase of Rs. 150 in the capital value of his land and would surrender land worth Rs. 50 to the Government. This corresponds to a betterment contribution of roughly one-third of the unearned increment of the ryot.

(ii) For the purposes of surrender, I propose to group (a) and (b) together and (d) and (e) together and suggest the following proportions:—

- |  |    |                                 |
|--|----|---------------------------------|
| (1) Perennial wet and perennial garden   | .. | Surrender of one acre in two.   |
| (2) Lands under long-duration paddy-cotton rotation and eight months garden lands. |    | Surrender of one acre in three. |

As regards (1) the value of the land retained by the ryot will go up to at least Rs. 200 an acre as indicated above, i.e., his unearned increment will at least be Rs. 150 and the value of the land surrendered by him (remembering that it is only dry land at the time of surrender) is again Rs. 50 or not more than one-third of the unearned increment. As regards (2) taking the paddy-cotton land, the two acres retained by the ryot will be under paddy in one year and under cotton in the next, which is equivalent to one acre under paddy and one acre under cotton every year. The paddy land will be worth nearly the same as the land under sugarcane-paddy rotation, say something more than Rs. 150, and the cotton land will be worth more than Rs. 100 (which is assumed to be the value of land growing irrigated mungari crops every year). The total value of the two acres will therefore be more than Rs. 250 and deducting the dry value at Rs. 50 an acre, the unearned increment is more than Rs. 150 and again the value of the land surrendered is about one-third of the unearned increment. The above figures are merely

illustrations but they are sufficiently near to the increases which are actually likely to occur to make the relative proportions fairly equitable as between irrigation for different kinds of crops.

(iii) As regards (c) in sub-paragraph (i), I am not suggesting any proportions of surrender as I am proposing below that none of the existing ryots should be given irrigation in the blocks selected for this rotation and that the blocks should be reserved for certain other purposes.

(iv) There remains the hingari irrigated dry lands and I propose a surrender of one acre in six such lands. The 5 acres retained by the ryot will be systematically irrigated in alternate years and this is equivalent to at least  $2\frac{1}{2}$  acres of mungari irrigated dry. The protection afforded to 5 acres when only a dry crop is grown and the opportunities available to the ryots to grow fodder and green manure crops on these lands are certainly worth at least half an acre of mungari irrigation and on the whole, the benefit derived from the project by surrendering one acre of dry land will be about the same as to the owners of mungari irrigated land.

(v) I have considered the question whether any allowance should be made for the relative fertility of the lands surrendered by ryots and those retained by them. Any difference in value on this account will be negligible as compared with the additional value conferred by irrigation (only good lands will be selected for irrigation) and it is undesirable to make the system too irksome to the ryots or too complicated to administer. I therefore suggest that the ryots may be allowed to make the surrenders anywhere in the irrigated blocks in which they own lands, provided that the extents surrendered under different types of irrigation are not altered. Even this proviso will be relaxed to some extent, under the proposals in paragraph 14.

13. The above proposals will apply to the normal surrenders to be made by the ryots but I recommend that the full surrenders as worked out above need not be insisted upon in all cases and that some exemptions should be granted in favour of the smaller ryots. These exemptions cannot take the form of calculating the surrender in all cases on the excess over a prescribed irrigated extent; for (1) this will result in a comparatively large number of small extents being surrendered and it would be difficult to consolidate them; (2) the deduction to be made will have to be different for different types of irrigation, e.g., sugarcane, as compared with mungari dry; and (3) there is no reason why any irrigation at all, free of surrender, should be given to very big ryots owning extents as large as 50 acres or 100 acres. I consider it desirable that in granting exemptions, allowance should be made not merely for the actual extents for which a ryot gets irrigation but also for the different types of irrigation which he gets and the general status of the ryot as determined by the total extent of land owned by him. Keeping in view the main object of the proposals and what I have said already in regard to the *rentier class* I consider that no ryot should be called upon to make

any surrender if, after the localization of ayacuts, his holding, including irrigable and pure dry lands, is not larger than what he and his family can cultivate by their own labour. What this limit should be, it is difficult to say, but I propose to be liberal and assume that a family can cultivate by its own labour 12 acres of pure dry land. The holding may actually consist of pure dry, irrigable dry, garden and wet lands and for the purpose of determining the exemption limit, I propose that (1) one acre of perennial wet or perennial garden should be treated as equivalent to four acres of pure dry land, (2) one acre of land under cotton-paddy rotation or 8-months garden should be treated as equivalent to three acres of pure dry, (3) one acre of mungari irrigated dry should be treated as the equivalent of two acres of pure dry land and (4) one acre of hingari irrigable dry (actually irrigated in alternate years) should be treated as equivalent to one and a half acres of pure dry. When the extents that will be irrigated for different kinds of crops are known, each holding will be converted into its "dry equivalent" on the above basis and the ryots whose holdings are equivalent to less than 12 acres pure dry will be exempted altogether from making any surrenders. Holdings which are equivalent to more than 12 acres pure dry will fall under two categories:—

(A) Those in which the full surrenders in accordance with the proposals in the previous paragraph will have the effect of reducing what is left to the ryot to less than the equivalent of 12 acres dry; and

(B) Those in which the full surrenders will *not* have such effect.

In (B) the full surrenders will be insisted upon and in (A) only so much of irrigable land need be surrendered as will leave the ryot with a holding equivalent to 12 acres dry.

14. It may sometimes happen that the extents to be surrendered in accordance with the scheme suggested in paragraphs 12 and 13 will be only a few cents in one or more of the categories, perennial, wet garden and irrigated dry. It would be difficult to deal with a large number of petty extents and I therefore suggest that where the extent of perennial wet or perennial garden land to be surrendered is less than 50 cents and where the extent to be surrendered in any other category is less than one acre, a ryot may be allowed to make the entire surrender required of him in one category—which will usually be mungari or hingari irrigated dry—provided that the "dry equivalent" of the extent so surrendered is the same as what it would have been if the surrenders had been made in each category separately. If even this does not give the minimum extent of 50 cents perennial or one acre of other irrigable land, a ryot may surrender pure dry land anywhere in his holding, equal in extent to the "dry equivalent" of the surrenders required of him. If a ryot owns no dry land, which he can so surrender or the dry equivalent is less than one acre, he may be allowed to pay "betterment"



contribution in money at the following rates and retain the small extents which he would otherwise have to surrender:—

	RS. AN ACRE.	
(1) Perennial wet and perennial garden lands .. .. .	200	}
(2) Long-duration paddy-cotton lands and eight-months garden .. .. .	150	
(3) Mungari irrigable dry lands .. .. .	100	
(4) Hingari irrigable dry lands .. .. .	75	

Calculated only on the extent that would otherwise have to be surrendered.

The above rates are not excessive because the transaction amounts to the ryot surrendering the petty extents and buying them back from the Government with the right to take water.

15. The main principles of the scheme suggested in the preceding paragraphs are as follows: (1) Only a portion of the unearned increment derived by a ryot need be given up to Government in the shape of land and the extent of land surrendered should ordinarily be proportional to the actual benefit or unearned increment derived by him from the project; (2) the full surrender will not be insisted upon if it would result in a ryot's holding being reduced to less than the equivalent of 12 acres pure dry and no surrender at all will be required if, after taking into account such irrigation as a ryot gets, his holding is less than the equivalent of 12 acres pure dry; and (3) the surrenders of petty extents which it would be difficult to consolidate, should be avoided. A few illustrations are given below:—

(1) A ryot gets irrigation for 4 acres perennial wet, 12 acres mungari dry and 24 acres hingari dry and has 50 acres of pure dry land in addition. He must surrender 2 acres out of the land selected for perennial wet, 3 acres out of the mungari irrigable land and 4 acres out of the hingari land.

(2) A ryot owns only 7 acres and gets mungari irrigation for 3 acres and hingari irrigation for the remaining 4 acres. The "equivalent dry" is just 12 acres and therefore no surrender need be made.

(3) A ryot gets mungari irrigation for 6 acres and owns 2 acres dry in addition. The dry equivalent of his holding is 14 acres and he need surrender therefore only the equivalent of 2 acres pure dry or one acre out of the 6 acres mungari irrigable land, although the normal surrender will be one-fourth of 6 acres, i.e.,  $1\frac{1}{2}$  acres.

(4) A ryot gets 2 acres of perennial wet irrigation and owns 30 acres of pure dry in addition. He will have to surrender one acre out of the two acres perennial, as even after this surrender, his holding is equivalent to 34 acres pure dry.

(5) A ryot gets one acre under paddy-cotton rotation, one acre of 8-months garden, three acres of mungari irrigation and has three acres of pure dry in addition. The dry equivalent of his holding is 15 acres. The normal surrender is 33 cents paddy-cotton land, 33 cents of 8-months garden land and 75 cents of mungari irrigated land, which is equivalent to  $3\frac{1}{2}$  acres dry; but this will reduce his holding to the equivalent of  $11\frac{1}{2}$  acres dry. He need therefore

surrender only the equivalent of 3 acres dry. The extents of paddy-cotton and garden lands to be surrendered are less than one acre and he should therefore make the whole surrender from the mungari irrigated dry. His surrender will therefore be  $1\frac{1}{2}$  acres irrigable dry land.

(6) A ryot gets 2 acres mungari dry irrigation and 3 acres hingari dry irrigation and has 10 acres of pure dry in addition. The normal surrender is 50 cents mungari irrigated and 50 cents hingari irrigated land and these are less than one acre each; he may therefore surrender instead 1.75 acres of pure dry land.

(7) A ryot gets one acre of mungari dry irrigation and 1.80 acres hingari dry irrigation and has 12 acres pure dry in addition. The normal surrender will be 25 cents mungari irrigated and 30 cents hingari irrigated. The dry equivalent is less than one acre. The ryot will therefore pay a betterment fee of  $25 + \frac{(30 \times 75)}{100} = \text{Rs. } 47-8-0$ .

As a concrete illustration of the above proposals, I have worked them out for the actual holdings in one village—Emmiganur of Bellary taluk—in the perennial reach assuming certain ayacuts under different crops. This village was selected because its extent (13,761 acres) is so large that it may be regarded as representative of conditions which it would ordinarily be possible to obtain only by taking a group of villages. The results, with working sheets, are given in Appendix IV and they may be perused. Certain other proposals in regard to consolidation and collective farms which I am making below are also illustrated in this Appendix.

16. I may say that the ryots of all the villages in the project area have been consulted broadly on a scheme of surrender of lands in lieu of payment of betterment fees. In a matter of this kind, complete unanimity is not to be expected, and there is always the general unwillingness of the ryot to part with his land to be contended with; but on the whole, however, I have found that the ryot population is fully alive to the difficulties which would be caused by inadequacy of labour under project conditions and the need for attracting labourers from outside and is prepared to accept a scheme of surrender as a necessary evil. I am of opinion that although some agitation is inevitable, the opposition to a moderate scheme such as that suggested above, would not be very great, particularly if some irrigation is allowed for perennial and wet crops. The basic proportion of 1 in 4 for the irrigation of dry crops in the above proposals is one which has been accepted by more than 95 per cent of the villages and the principle of a higher proportion of surrender for the irrigation of the more valuable crops is also generally acceptable to the ryots.

17. One point raised by some ryots is how mortgages on surrendered lands are to be dealt with. This should present no difficulty at all if it is borne in mind that, with the advent of irrigation, the value of the mixed holding left to a ryot after the surrender, will invariably be more, and in many cases very much more than the dry holding held by him previously. Therefore, even if all the lands in a ryot's holding have been mortgaged to one or more

persons, the value of the holding left after the surrender is more than sufficient security for the mortgagee or mortgagees. Some adjustments will, no doubt, be necessary. Where for instance, all the lands in a holding have been mortgaged to one individual, a revised mortgage deed covering only the lands left to the ryot will have to be executed. Where the lands surrendered have been mortgaged to one man and the remaining lands to another, revised mortgage deeds will have to be executed with part of the holding left as security for one mortgagee and the remaining part to the other. Where the same lands have been mortgaged to two or more persons, the new mortgage deeds should not affect the relative priority of the mortgages in favour of the different persons. The special legislation contemplated may therefore provide specifically for the surrender of lands to Government free of encumbrances and for the execution of new mortgage deeds in such manner as might be found most suitable, in any particular case. No stamp duty need be levied on new mortgages executed as a result of the surrenders. I contemplate that when irrigation commences, arrangements should be made to enable the ryots to clear off existing debts. I shall deal with this question in a later report, but I mention it here to show that ordinarily there would be no room for the harrassment of ryots by mortgagees as a result of the scheme of surrender proposed above.

18. It is sometimes stated that a betterment contribution cannot be levied under the Tungabhadra Project because the lands would continue to be registered as dry and a water-cess levied. I think there is nothing in this. The registry of land as wet or dry is an administrative detail, whereas in the matter of betterment contribution we are concerned only with the question whether there is a clear accretion to the capital value of land or not. As I have indicated above, the lands in respect of which capital value will increase will be clearly defined and this is sufficient basis for a scheme of betterment contribution. The localization of the irrigable area will also facilitate a scheme of compulsory levy of water-cess.

19. (i) The lands surrendered to Government will be scattered here and there over the irrigated blocks in the villages and the problem of bringing new settlers to the area will be extremely difficult unless the lands to be made available for their cultivation are in compact blocks or are sufficiently closely clustered together as to make it possible for new colonies to be started. A mere provision for exchanges will not bring about a concentration of surrendered lands at particular places, for the local population will be apathetic and their attitude towards attempts to consolidate for the benefit of outsiders will naturally be one of antagonism. Attempts at consolidation will be a failure unless some substantial advantage is given to the ryot who is expected to exchange one land for another. I have considered the possibility of giving this advantage in the form of a smaller extent from a ryot in exchange for a larger extent to be given to him; but this is unsatisfactory as it will considerably reduce the extent that can be made available to new settlers and create

administrative difficulties. My proposals are as follows:—New colonies should be formed in areas which are far away from existing village sites. This is comparatively easy as in the project area villages are in many cases situated more than 5 or 6 miles from one another. House sites for new colonies should be selected with reference to level, availability of water-supply, etc., and compact blocks aggregating something like 1,000 acres should be selected round each of these sites. These compact blocks should ordinarily be areas which will receive mungari and hingari irrigation from the irrigation channels and distributaries as designed. Though the areas are irrigable, the right to irrigate them will *not* be given to any of the existing landholders in the selected blocks. The particulars of irrigation for different kinds of crops for each ryot, the normal surrender to be made by him, and the exemptions, if any, to be given, will be worked out on the basis of the irrigation in blocks outside the selected blocks, and the surrendered lands will be irrigable lands scattered here and there outside the selected blocks. The existing owners of lands in the selected blocks will then be allowed to exchange the lands in the selected blocks for irrigable lands surrendered outside at the following rates:—

<i>Surrendered lands.</i>	<i>Lands in the selected blocks.</i>
One acre of irrigable dry land (no distinction between hingari and mungari) .. .. .	For 1 acre.
One acre of long-duration paddy, cotton or eight months' garden land .. .. .	For 1½ acres.
One acre of perennial wet or garden land .. .. .	For 2 acres.

The rates are such that the existing owners of lands in the selected blocks would gladly exchange them for irrigable land outside. Under this scheme it would be easy for Government to obtain possession of almost all the lands in the selected blocks to be made available for cultivation by new settlers. The essential point on which the scheme hinges is that the selected blocks will not be regarded as irrigable at all so far as the existing owners are concerned, and therefore no ryot who sticks to his land in the selected block in spite of the opportunities given to him to acquire irrigable land on easy terms outside, should be given irrigation for that land. Such lands may be compulsorily leased to one of the new settlers on payment of rent to the owner equal to interest at 4 per cent of the value of similar *dry* land in the locality (land revenue to be paid by the lessee). This is not a hardship as in the illustration given in paragraph 5 above, because the ryot now under consideration is one who has declined to avail himself of the opportunity to exchange his dry land for irrigable land outside.

(ii) It might at first sight seem rather invidious to refuse to allow the existing ryot to irrigate his land in a selected block but to give the land for irrigation to outsiders. It must however be

remembered that some 60-70 per cent of the project area will continue to be dry and the exclusion of the selected blocks from irrigation by the existing ryots amounts merely to increasing the unirrigated area by a small percentage. So far as the ryots owning lands in the selected blocks are concerned, they would mostly be getting irrigable lands for dry lands acre for acre, i.e., they will be virtually exempt from making any surrender at all and this would more than make up for their being required to be content with irrigation outside the block. There would also be the advantage that the irrigable lands obtained by them would ordinarily be nearer to their villages than the lands given up in the selected blocks.

(iii) No provision for adjustment for difference in fertility of soil is necessary as such difference will be insignificant compared to the advantage which the ryot gets in obtaining irrigable lands for dry lands.

(iv) Ordinarily, irrigable dry lands alone need be offered in exchange for lands in the selected blocks but lands irrigated for other crops may be offered to the extent necessary to secure all the lands in selected block for new settlers.

(v) No attempt at consolidating the surrendered lands other than mungari and hingari irrigated, need be made. The extents of such lands surrendered will be comparatively small and any such lands left over after the exchanges referred to above and in paragraph 21 below, may be assigned to ryots of the village who do not get any irrigation for valuable crops on payment of value as specified in paragraph 14 above or may be sold in auction.

(vi) In making exchanges between lands in the selected blocks and irrigable lands outside, care should be taken to see that petty extents of irrigable lands are not left over by too strict an adherence to the rates of exchange specified in sub-paragraph (i). Different surrendered lands may be combined so as to secure as closely as possible the extent to be given to any particular ryot in exchange for his land in the selected block and if any petty extents have to be given in excess of the calculated extents, land value may be collected at the rates specified in paragraph 14. Where a ryot owns a comparatively large extent of land in the selected blocks, he may well be content with a little less than what the proportions specified in sub-paragraph (i) would give him.

20. (i) There are four classes of persons who may be regarded as likely to take up lands in the project area and settle down there :—

(1) Persons in the villages which will be submerged by the reservoir particularly in Hospet taluk;

(2) any ex-military men whom the Government may wish to provide with lands;

(3) coolies connected with the construction of the Tungabhadra dam and the excavation of canals who may wish to settle down in the area; and

(4) landless agriculturists from outside the project area who may be willing to migrate to the area.

(ii) There are 41 villages in the Hospet and Hadagalli taluks which will be wholly or partly submerged by the reservoir. In 14 villages with a population of about 9,500, the village sites and almost all the lands will be submerged. In six other villages with a population of about 6,800, a very large proportion of the lands, varying from about 35 to 60 per cent, will not be submerged so that a considerable portion of the population would wish to remain in new village sites to be formed in the area outside the water-spread in the villages. In the remaining villages, only a narrow strip along the Tungabhadra will be submerged and they may be left out of account for our present purpose. The population that will be compelled to move out of the existing villages may be estimated at about 12,000. I have made enquiries in the villages concerned and the ryots do not seem to be very keen on moving on to the ayacut area of the Tungabhadra Project as many of them have connections in the Hadagalli and Harpanahalli taluks. Some ryots were, however, in favour of taking lands in the ayacut area. There are also some landless labourers who are willing to migrate. In view of the pressing need for increasing the population of the project area, I would suggest that an intensive propaganda should be carried on in the reservoir area to prevail on as many of the villagers as possible to move to the ayacut area. The lands that may be surrendered towards betterment contribution will be available only one or two years after irrigation commences while the ryots of the submergible villages will be asked to give up their lands some two or three years before the dam is completed. There will therefore be an interval of some four years during which the ryots will be without lands, if they are asked to wait till surrendered lands become available. Most of them will however have the compensation amounts awarded for the submerged lands to be invested in the purchase of new lands and there is no reason why an opportunity for investing it in the ayacut area should not be provided. I would suggest that a careful estimate should be made after detailed enquiry, as to the number of persons willing to migrate and that sufficient land to meet their requirements should be acquired in the ayacut area. These ryots have some tradition of wet cultivation behind them, and the acquisition should therefore be, preferably, of lands in which paddy will be cultivated. I therefore recommend that as soon as decisions have been reached in regard to the localization of the ayacuts, some of the blocks selected for short-term paddy-cotton rotation should be acquired at the current rates for dry land in the locality, with of course the 15 per cent solatium, for assignment, on collection of value, to the ryots from the submergible area willing to invest their compensation amounts in the ayacut area. The value to be collected will be the acquisition cost of the land, increased by a small amount to cover the cost of the staff employed in the acquisition. Acre for acre, this will ordinarily be much more than the compensation which the ryots will receive for their lands in the submerged area, but they will have the advantage that the lands

will be irrigated when project water becomes available. The lands acquired should be in the villages commanded by the project in Hospet taluk and the adjoining villages of Siruguppa taluk; this is a Canarese area and ryots from the submergible area may be more willing to take up land there. I should say at a guess that about 8,000 acres out of the 32,000 acres I have provided for short-term paddy-cotton rotation might be acquired for this purpose. More might be acquired if necessary, and if some lands are not taken up, it would not matter as they can always be sold in auction when water is supplied. Till the lands are assigned to the ryots of the reservoir area or are sold in auction, the existing owners would continue to cultivate them and pay the ordinary assessment plus 2 per cent of the compensation awarded in respect of the lands (vide similar orders passed in Government Memo. No. 208-D/45-18, dated 18th December 1945, in respect of lands to be acquired in the reservoir area).

(iii) The problem of settling suitable ex-soldiers on land cannot wait until irrigation under the project commences and lands are surrendered to Government in lieu of betterment fees. In paragraph 2-8 of his report to the Government of India, Mr. C. C. Garbett suggests that Provincial Governments should receive from the Government of India whatever assistance they might require to make land available for demobilized soldiers. One form of assistance suggested is for the Government of India to meet the cost of purchasing land for the purpose and Mr. Garbett specifically mentions the possibility of purchasing land under the Tungabhadra Project. I do not know whether any assistance has been sanctioned by the Government of India or whether it is proposed to earmark any sums for purchase of lands as part of the scheme of Post-War Reconstruction. If any funds are available for acquiring lands for ex-military men, and if a sufficiently large number of men considered suitable for land grants are willing to settle down in the project area, some more blocks under short-term paddy-cotton rotation at the eastern end of the perennial reach of the canal (which is a Telugu area) may be acquired as soon as the ayacuts have been localized and funds become available. Lands in which paddy will figure in the rotation are more suitable for grant to ex-military men than lands which will grow only irrigated dry crops, and the cost of acquisition is not likely to exceed Rs. 100 an acre. If ex-military men drawn from the agricultural classes are settled in the project area, it would be some contribution to the solution of the labour problem in the area, but they must be men who will work on the lands, not men who expect to get a comfortable rent from lands granted to them.

(iv) As regards (3) in sub-paragraph (i), coolies will have no funds to invest in the purchase of land but men connected with the construction works for some years will ordinarily have established local connections and may be willing to settle down in the area. It is doubtful whether all the labourers required for the construction of the project will be available locally and labourers from outside are likely to come in if an announcement is made that men and women

who have worked for, say, 2 years or more in connexion with the construction of the project, will be considered for grant of lands on the same terms as agriculturists from outside the project area.

(v) Landless agricultural labourers from other districts are likely to constitute most of the new settlers in the project-area. Would-be colonists should be selected with great care, due weight being given to physical fitness and qualities of industry, endurance and self-reliance. Ability to maintain themselves till the first crop is harvested on the lands that may be allotted to them will be of considerable help, but a man who is otherwise likely to make a good colonist should not be rejected merely because he cannot provide for himself to begin with. A family in which most of the members are workers is preferable to one with too many dependents. If colonies of new settlers are to be successful, they must be so formed that there is some common bond between the men and women in the same colony. This may be either based on community or on the fact that the individuals come from nearby villages in the same taluk or district. Some sort of survey of the areas from which immigrants are likely to come is therefore necessary to ensure that immigrants are properly grouped together when new settlements are formed in the project area. The extent of land to be allotted to each family should be large enough to serve as an attraction to settle down in the project area, but should not be so large as to make it unnecessary for the family to work as labourers for the bigger landholders or to take additional land on lease from them. I would suggest that 2 acres of irrigated mungari land and 2 acres of irrigable hingari land would be a suitable allotment for a family. In areas where it is possible for the members of the family to get a share in the profits of a collective farm, however (please see next paragraph), the allotment may be reduced to 3 acres made up of approximately equal extents of mungari and hingari irrigated lands. The immigrants will be too poor to pay the full value of the lands, but something towards land value may be collected from them in easy instalments beginning from, say, the third year of their being put in possession of the lands. I would suggest concessional rates of Rs. 75 an acres for mungari lands and Rs. 50 an acre for hingari lands, the total value to be collected without interest in, say, 15 to 20 instalments. I contemplate that a co-operative society composed of all the members of a colony will be the nominal owner to begin with and that full ownership will be transferred to the members after the land value has been paid in full. I shall deal in a later report with the financial and other assistance to be given to these colonists.

(vi) Labourers connected with the construction of the project and any landless labourers willing to move to the project area from the submergible area or from the area not served by the project in Bellary and Kurnool districts may be given land and assistance on the same terms as immigrants from other districts.

21. (i) Acquisition for the ryots from the reservoir area and for ex-military men will account, say, for about 12,000 acres out of



the 32,000 acres I have provided for short-term paddy-cotton rotation in the project area. I recommend that the remaining blocks localized for this rotation should be run as collective farms after extinguishing, as completely as possible, private ownership in them. The procedure for this purpose will be the same as for securing compact blocks for new settlers as described in paragraph 19 above, i.e., no irrigation right will be given, in a block selected for collective farming, to any of the existing ryots but they will be allowed to exchange lands in the blocks for irrigable lands surrendered in other blocks at the rate of one acre irrigable dry for one acre of land in the block selected, and one acre of perennial wet or perennial garden for 2 acres in the block. (These blocks will be in the perennial reach and there is therefore no question of exchanging with 8-months garden land, etc.) If any ryot does not exchange his land in a selected block for irrigable lands outside it, his land will be compulsorily leased to a co-operative society which will be managing the collective farm on payment of a rent equal to 4 per cent interest on the dry value of the land. Any ryot of the village or any new settler in the project area may become a member of the co-operative society. The co-operative society will pay wages at current rates to any member working on the farm and also the hiring charges for any work-animals lent by a member. These charges together with other cultivation expenses, land revenue, water-cess, etc., will be deducted from what is realized by sale of the produce, and the net profits will be divided among the persons who have worked on the farm or have lent cattle in proportion to the wages or hiring charges earned by each member. The scheme is the same as that suggested by Sir N. Gopalaswami Ayyangar except that (i) I have proposed that private ownership should be extinguished, unless a recalcitrant ryot refuses to exchange his land in the blocks for irrigable land outside in which case, he only gets interest on "dry" land value; and (ii) that the scheme should be confined to the blocks under short-term paddy-cotton rotation. The reason for (ii) is that economies by large-scale farming are perhaps possible in the cultivation of these crops, and there is therefore a greater likelihood of there being some profit to share. Large-scale farming may also avoid to some extent the wasteful use of water, and there is no harm if the experiment should fail, as the Government can always sell the lands in auction at any stage.

(ii) I am not suggesting a system of collective farming for the long-duration paddy-cotton rotation area in the non-perennial reach as there is no other paddy cultivation in this reach and the existing ryots would resent their being deprived altogether of irrigating private lands for this important crop.

22. (i) I shall now try to estimate the extent of lands that will be surrendered to Government and the number of new families that could be settled in the project area. Under my proposals, the liability to surrender depends more on the status of the ryot than on the precise extent for which he gets irrigation, and as irrigable lands will be treated as equivalent to  $1\frac{1}{2}$ , 2, 3 or 4 acres pure dry

and as the case may be, many of the ryots who now own less than 12 acres dry will also be called upon to make surrenders. For the purpose of this estimate, I shall assume that surrenders will not be made in respect of irrigation in holdings which are now below 8 acres in extent and in respect of one-third of the irrigation in holdings of between 8 and 12 acres. It will be seen from Appendix II that the total extent in the project area (excluding a few villages) held in holdings of less than 8 acres each is about 1.5 lakhs acres and one-third of the extent held in holdings of between 8 and 12 acres is about 37,350 acres a total of 1.87 lakhs acres or about 22 per cent of the total of all holdings (8.47 lakhs acres). Allowing some margin, it may safely be assumed that surrenders will be made in respect of at least 75 per cent of the irrigation allowed under the project. There will, however, be no surrenders in respect of the area ear-marked for short-term paddy-cotton rotation and of mungari and hingari lands set apart for new colonies. I have allowed 18,000 acres of mungari lands and 18,000 acres of hingari lands for new colonies and the total extent likely to be surrendered (please see working sheet in Appendix III) is sufficient to enable private ownership to be extinguished in about 60,200 acres under the scheme I have suggested. The lands to be obtained by exchange are about 36,000 acres (36,000 acres reserved for new colonies and about 20,000 acres for collective farming). Some surplus of surrendered lands will therefore be left over, and these will mostly be of garden and paddy lands, for the main principle to be followed in effecting exchanges is that, paddy and garden lands should be utilized only to the extent that irrigable dry lands surrendered are not sufficient for obtaining by exchange the reserved blocks in the locality concerned. The surrendered lands left over may be granted to ryots who do not get any irrigation on collection of value at the rates specified in paragraph 14.

(ii) Out of the 36,000 acres ear-marked for new settlers, one half may be assumed to be in areas where a collective farm will be located within a reasonable distance. At the rate of 3 acres per family lands can be allotted to 6,000 families in such areas. The remaining 18,000 acres will be sufficient for about 4,500 families at the rate of 4 acres per family. On the whole, therefore, it should be possible to settle at least 10,000 families in the project area. The concessional land values that may be collected in instalments from the settlers will be  $(18,000 \times 75)$  plus  $(18,000 \times 50) = 22.5$  lakhs of rupees and something more may be realized from the sale of garden and paddy lands here and there to ryots and by payment of betterment contribution in money in stray cases. On the whole, a sum of about Rs. 30 lakhs will be realized. This is small compared to the cost of the project, but in itself is not insignificant.

23. The advantages of the scheme proposed are, in broad outline, as follows:—

(i) With the considerable addition to the labour force in the area, more rapid development of irrigation under the project would be possible;

(ii) the scheme ensures a very wide distribution of the benefits of irrigation while maintaining the principle of selecting blocks for irrigation so as to secure the maximum efficiency of irrigation and the maximum increase of production; the collective farms have a special value in this regard;

(iii) from the point of view of the individual landholder, he will have a smaller area to develop while more labour will be available and his resources of capital will be intact to meet the larger cultivation expenses and the cost of any reclamation that may be required. The water-cess to be paid will also be correspondingly reduced and this is important in the initial stages as reclamation takes time;

(iv) the fact that betterment contribution is made in the shape of land avoids inequalities of incidence that would otherwise result from differences in land values in different localities, differences in fertility, price fluctuations, etc.;

(v) there is opportunity for a large number of landless labourers to become small peasant proprietors on terms which they would not find too onerous to fulfil; and

(vi) the real cost of the project would be diminished by the sums which the Government may be able to realize from the new settlers towards land value, by the sale of surrendered lands assigned to local ryots, etc.

24. The Famine Code Revision Committee has suggested that irrigable lands not brought under irrigation within a period of 10 years from the date of supply of water from the project, might be acquired at a valuation to be fixed in advance. Development will be quicker under the scheme proposed above, and though many landholders will have large extents to be brought under irrigation, they will ordinarily be persons with proportionately larger resources. There will, however, be some lands not brought under irrigation within a reasonable time after the advent of the project and an enabling provision for acquiring such lands is desirable. It will act as a spur to development and the interval of 10 years suggested by the committee is suitable. The question whether the lands should be actually acquired may be decided with reference to the conditions prevailing at the time when it comes up for decision. The compensation to be paid may be at the rate applicable to similar dry land in the locality at the time; but the owner will ordinarily have surrendered some land as betterment contribution in the first instance, and the "dry" value of any land so surrendered should be added to the compensation awarded for the land actually acquired.

25. The pure dry lands that may be surrendered to Government under the above proposals may be used by a system of exchanges, to form small compact blocks of unirrigable lands on the margin of cultivation to be set apart as village forests to provide fuel to the villagers and some pasture for cattle. A block of comparatively poor

soil should be selected for the forests, so that the ryots owning lands in the block would gladly exchange them for dry land surrendered here and there in the villages. The actual rate of exchange may be left to be decided on the facts of each case; but as the ryots would appreciate the advantages of having a village forest and the lands selected would be of poor quality, it should ordinarily be possible to obtain more than one acre in the forest area for every acre of surrendered dry land granted in exchange. If the consolidation of dry lands does not give a sufficiently large area for the forest (it need not in any case exceed 50-100 acres in each village or group of 2 or 3 villages), irrigable lands surrendered may be offered in exchange for lands in the forest area at not less than the "dry equivalent" rates specified in paragraph 13. Exchange with irrigable lands should be the ordinary rule for ryots in the block selected for forest, who do not get irrigable lands outside.

26. Special legislation will be needed to give effect to the above proposals. The points to be embodied in the legislation are:—

(i) the localization of irrigable areas before betterment contribution is levied;

(ii) the principle that generally betterment contribution should be made in the shape of land;

(iii) the proportions of surrender for different kinds of irrigation recommended in paragraph 12;

(iv) the exemptions recommended in paragraph 13;

(v) the principles in paragraph 14 designed to avoid surrender of petty extents;

(vi) the provision that if a ryot is unwilling to accept irrigation on the terms proposed, the irrigable lands in his holding should be acquired as pure "dry" lands;

(vii) the rates at which surrendered lands may be exchanged for lands reserved for colonists and for collective farming—paragraphs 19 and 21;

(viii) provision for the compulsory lease as "dry", of lands in the reserved blocks which the ryots do not exchange for irrigable surrendered lands outside;

(ix) provision for the acquisition as "dry", of the lands which might be set apart for ex-military men and the ryots from the sub-mergible area;

(x) provision as to mortgages dealt with in paragraph 17;

(xi) provision for exchanges to form compact blocks to be set apart as village forests; and

(xii) provision for the acquisition of irrigable lands not brought under irrigation within 10 years of the supply of project water.

27. Before I conclude, I may say that I have approached the question not as one of social or agrarian reform but purely from the point of view of development of irrigation under the project.

Though the principle of betterment contribution is used, the object is not to make the project less unremunerative; it will be noticed that the financial results are negligible and will probably not even cover the cost of providing the special assistance which the ryots and the new colonists alike will need during the earlier years of irrigation. The proposals are a sincere attempt to evolve an administratively feasible scheme which would help the ryots in some measure to reap and enjoy the fruits of irrigation and I recommend the proposals for acceptance.

I am sending copies of this report to the Chief Engineer for Irrigation and the Secretary to Government, Public Works Department.

**T. N. S. RAGHAVAN,**  
*Special Officer, Tungabhadra Project, Bellary.*

### APPENDIX I.

#### COMPARISON OF LAND VALUES.

*Statement No. 1.—Comparative values of wet, irrigated dry and pure dry lands as ascertained from registration statistics in a few villages of the Bellary district.*

Name of village.	During the war.								
	Good lands.			Ordinary lands.			Poor lands.		
	Wet.	Irrigated dry.	Pure dry.	Wet.	Irrigated dry.	Pure dry.	Wet.	Irrigated dry.	Pure dry.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Genkihal .. ..	..	172	69	..	100	40	..	..	9
Moka .. ..	125	..	73	82	..	35	42	..	27
Belegal .. ..	..	172	109	..	96	50	..	40	32
Thornagal .. ..	..	..	43	..	..	25	..	..	20
Daroji .. ..	283	..	..	188	..	29	108	..	21

Name of village.	Prewar.								
	Good lands.			Ordinary lands.			Poor lands.		
	Wet.	Irrigated dry.	Pure dry.	Wet.	Irrigated dry.	Pure dry.	Wet.	Irrigated dry.	Pure dry.
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
Genkihal .. ..	..	139	65	..	..	37	..	..	12
Moka .. ..	72	..	42	61	..	34	..	..	26
Belegal .. ..	..	120	96	..	..	39	..	..	28
Thornagal .. ..	..	72	24	..	28	18	..	21	14
Daroji .. ..	234	..	..	88	..	24	67	..	17

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Statement No. 2.—Comparative value of irrigable dry and pure dry lands in Bannur village under the Kurnool-Cuddapah canal in the Kurnool district.

Pre-war.						During the war.					
Good regar or loam.		Ordinary regar or clay.		Inferior regar or red loam.		Good regar clay or loam.		Ordinary regar clay.		Inferior regar or red loam.	
Irrigated dry.	Pure dry.	Irrigated dry.	Pure dry.	Irrigated dry.	Pure dry.	Irrigated dry.	Pure dry.	Irrigated dry.	Pure dry.	Irrigated dry.	Pure dry.
222	..	57	..	38	23	361	166	95	50	123	63

Statement No. 3.—Average value of wet lands irrigated by the Tungabhadra and Chikkahagari channels and dry lands as estimated by the Special Land Acquisition staff in 1942 in a few villages which will be submerged by the reservoir.

Name of village.	Average rate per acre of wet lands.		Average rate per acre of dry lands.	
	RS.		RS.	
1 Hosakota .. .. .	327	81		
2 Arlehalli .. .. .	644	37		
3 Anaveri .. .. .	804	18		
4 Thambrahalli * .. .	291	21		

\* River spring channel.

APPENDIX II.

Extents held in holdings of different sizes in the area commanded by the Low Level Canal Scheme.

Taluk.	0—4 acres.		4—8 acres.		8—12 acres.		12—16 acres.	
	No.	Extent.	No.	Extent.	No.	Extent.	No.	Extent.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Kurnool villages). (55)	4,430	8,163	3,709	22,846	2,794	27,147	1,831	25,620
Pattikonda villages). (8)	650	2,186	559	4,664	507	5,689	355	5,771
Hospet villages). (13)	1,212	1,876	425	2,554	292	2,848	165	2,176
Alur (27 villages). (27)	2,139	5,631	1,308	7,479	871	8,169	584	7,806
Bellary villages). (33)	1,987	4,350	1,887	11,870	1,356	13,663	908	11,800
Adoni villages). (89)	7,000	17,076	6,153	33,670	3,492	35,182	1,766	24,462
Siruguppa villages). (61)	3,620	8,155	3,388	19,854	1,975	19,358	1,274	17,269
Total ..	..	47,437	..	1,02,946	..	112,055	..	94,904

Taluk.	16—20 acres.		20—50 acres.		Above 50 acres.		Total extent.
	No.	Extent.	No.	Extent.	No.	Extent.	
(10)	(11)	(12)	(13)	(14)	(15)	(16)	
Kurnool villages). (55)	1,241	21,605	2,256	67,450	434	41,655	214,492
Pattikonda villages). (8)	173	3,490	260	8,715	38	3,070	33,594
Hospet villages). (13)	126	2,149	260	7,500	69	13,824	32,927
Alur (27 villages). (27)	359	6,273	740	22,585	232	24,593	82,485
Bellary villages). (33)	575	11,069	1,251	34,733	278	25,217	112,711
Adoni villages). (89)	1,141	19,067	1,607	45,768	386	40,848	216,973
Siruguppa villages). (61)	772	13,704	1,485	45,803	330	29,679	153,821
Total ..	..	78,266	..	232,510	..	178,886	847,004

NOTE.—The figures for 20 villages of Siruguppa taluk and 28 villages of Adoni taluk commanded by the Low Level Canal Scheme have not been included in the above statement.

## APPENDIX III.

Particulars.	Perennial wet lands.	Perennial garden lands.	Lands under long duration paddy-cotton rotation.	Lands under short duration paddy-cotton rotation.	Eight months garden lands.	Mungari irrigable dry lands.	Hingari irrigable dry lands.
(1) Ayacut proposed.	30,000	7,200	10,000	32,000	4,800	86,000	1,30,000
(2) Extent set apart for colonists collective farming, etc., in which existing ryots will not be given the right to use water.	..	..	..	32,000	..	18,000	18,000
(3) Net area in respect of which existing ryots will be given right to irrigation.	30,000	7,200	10,000	..	4,800	68,000	1,12,000
(4) Deduct 25 per cent for holdings which may not make any surrender.	7,500	1,800	2,500	..	1,200	17,000	28,000
(5) Net extent in respect of which surrenders will be made.	22,500	5,400	7,500	..	3,600	51,000	84,000
(6) Proportion of surrender.	1:2	1:2	1:3	..	1:3	1:4	1:6
(7) Extent that is likely to be surrendered.	11,250	2,700	2,500	..	1,200	12,750	14,000
(8) Extents of lands reserved for special purposes that could be obtained by exchange.	22,500	5,400	3,750	..	1,800	12,750	14,000
60,200 acres.							

## APPENDIX IV.

*Illustrative localization and working out of surrenders in Emmiganur village of Bellary taluk.*

The total area of the village is 13,761 acres with a cultivable extent of 12,554 acres. Mr. Thirumalai Ayyangar has proposed an ayacut for this village of 502 acres single crop wet, 817 acres garden, and 4,488 acres of irrigated dry, making a total ayacut of 5,807 acres. The ayacut has, of course, not been localized but is merely given in lump figures under different supply channels and distributaries. The areas in which wet and garden crops would be allowed were, however, broadly marked in a plan recently furnished by the Public Works Department. These areas have been inspected in detail. It was found that some of the areas indicated for paddy were of very poor gravelly soil with large loose stones, assessed at six annas an acre. These lands have been excluded from irrigation altogether, in accordance with the principle that, as far as possible, good lands should be selected for irrigation. The village is in the 'perennial reach of the canal, and keeping in kind the general cropping scheme proposed in my reference No. 16/46, dated 21st January 1946, the experimental localization has been made with a view to secure about 400 acres perennial wet, about 275 acres of garden, about 375 acres of lands under short-term paddy-cotton rotation and about 4,400 acres of irrigated dry. Blocks for these ayacuts were selected after detailed inspection. The land for short-term paddy-cotton rotation has been located in a well-shaped block draining into a big natural water-course and situated more than six furlongs from the village-site. Lands for the perennial block have been located between natural water-courses, the irrigation being under a supply channel which will apparently run on the ridge between the two water-courses. This block is about a mile from the village site. The garden lands form a block round the village-site. To avoid undue labour

in working out surrenders, irrigable "dry" lands have been assumed to be lands which will be irrigated every year, in respect of which the normal surrender will be one acre in four. There is some poor low-lying land adjoining the perennial wet area and this would be suitable for a village forest. It will be seen from the plan enclosed that the nearest village Veerapuram to the east is more than five miles and Chennapatnam, a hamlet, is about four miles away from the main village. It has therefore been assumed that a new colony will be formed at the place marked (P) in the plan somewhere midway between Emmiganur and Veerapuram. The soil is black here but a high level land has been selected for the new village-site in S. No. 274, and there is a small water-course from which drinking water could be tapped. A compact block of irrigable dry land round about the new village-site measuring about 815 acres has been assumed to be land set apart for the new colonists. It has been assumed that the block selected for short-term paddy-cotton rotation will be set apart for collective farming. Surrenders have been worked out only in respect of lands outside these two blocks on the basis of the actual extents that would be irrigated in each holding, after allowing for exemptions as described in paragraph 13 of the report. Surrenders of petty extents have been avoided as indicated in paragraph 14. Working sheets are attached showing surrenders in respect of all holdings which get irrigation of one kind or another. The names of the ryots are omitted but patta numbers are given. Pattas have been combined wherever they belong to the same individual. The extent to be surrendered under different categories are as follows:—

	Actual area of the block selected.	Extents to be surrendered.
	ACS.	ACS.
Perennial .. .. .	393.22	190.88
Garden .. .. .	273.07	111.67
Irrigated dry (excluding reserved block) ..	3,613.10	816.68

This will make it possible for 1,420 acres of land reserved for special purposes to be obtained by exchange. Actually, only 815 acres of land have been reserved for colonists and 380 acres for collective farming. After extinguishing private rights in these blocks, some 110 acres of perennial wet and garden lands will be left over which can be assigned on collection of value to the ryots of the village who do not get any irrigation.

The number of ryots who own lands in the reserved blocks is 104 of whom 66 do not own lands in other irrigable blocks. The number of ryots who get irrigation in the village will thus be 66 more than the number shown in the working sheet.



## Experimental localization in Yemmiganur

Serial number.	Holding number.	Total extent of holding.	Irrigable extent.						Extent to be	
			Perennial.	Garden.	Irrigated dry.	Total.	Pure dry area.	Dry equivalent.	Perennial	Garden.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	1 & I. 68.	44.85	..	..	35.14	35.14	9.71	79.09	..	..
2	2 & I. 74.	13.46	..	1.48	11.36	12.84	0.62	29.26	..	0.71
3	3 & I. 78.	68.77	..	..	20.04	20.04	48.73	88.81	..	..
4	5	40.96	..	..	..	..	40.96	40.96	..	..
5	6 & I. 86.	26.48	..	1.41	18.40	19.81	6.65	49.09	..	0.70
6	8 & I. 94.	10.24	..	..	8.02	8.02	2.22	18.26	..	..
7	9	19.54	..	5.43	14.11	19.54	..	49.94	..	2.72
8	12	0.40	..	0.40	..	0.40	..	1.60	..	0.20
9	15	16.37	..	..	11.91	11.91	4.46	28.28	..	..
10	18 & 280	17.13	..	..	14.13	14.13	3.00	31.28	..	..
11	19	4.66	..	..	4.66	4.66	..	9.32	..	..
12	20	37.01	..	..	19.60	19.60	17.41	56.61	..	..
13	21	19.92	..	..	10.21	10.21	9.71	30.13	..	..
14	22	15.34	10.81	..	..	10.81	4.53	47.77	5.40	..
15	24	8.00	..	5.24	..	5.24	2.76	23.72	..	2.62
16	25 & I. 136.	42.56	..	..	4.57	4.57	37.99	47.13	..	..
17	26 & I. 123.	57.70	..	..	2.41	2.41	55.29	60.11	..	..
18	30 & 212 & I. 61.	40.75	..	..	..	..	40.75	40.75	..	..
19	35	4.61	3.95	..	..	3.95	0.66	16.46	1.98	..
20	36	15.31	..	3.48	6.76	10.24	5.07	32.51	..	1.74
21	38	11.96	..	..	2.69	2.69	9.27	14.65	..	..
22	39 & I. 163.	65.50	7.58	..	53.54	61.12	4.38	141.78	3.79	..
23	43 & I. 87.	16.14	..	0.58	3.00	3.58	12.56	20.88	..	0.29
24	44	64.49	27.21	2.95	27.36	57.52	6.97	182.33	13.61	1.47
25	47 & I. 20	9.02	..	..	4.47	4.47	4.55	13.40	..	..
26	49	17.41	..	2.97	..	2.97	14.44	26.32	..	1.49
27	50	10.09	..	..	10.09	10.09	..	20.18	..	..
28	51	3.85	..	..	3.85	3.85	..	7.70	..	..
29	52	32.48	..	..	28.29	28.29	4.19	60.77	..	..
30	54	27.11	..	8.92	..	8.92	18.19	53.87	..	4.46
Total		762.00	40.55	32.86	314.61	397.02	365.07	1,323.93	24.78	16.43
31	55 & I. 58	149.74	23.15	..	19.93	43.08	106.66	239.12	11.58	..
32	56	3.69	..	3.69	..	3.69	..	14.76	..	1.84
33	58	24.28	..	..	10.58	10.58	13.70	34.86	..	..
34	62	11.01	..	..	4.01	4.01	7.00	15.02	..	..
35	64	30.81	16.32	..	5.97	22.29	8.52	85.74	8.16	..
36	65	29.20	..	..	17.30	17.30	11.90	46.50	..	..
37	66	9.90	..	0.99	..	0.99	8.91	12.87	..	0.50
38	67	5.61	..	..	5.61	5.61	..	11.22	..	..
39	68	21.86	..	0.43	..	0.43	21.43	23.15	..	0.22
40	72	18.60	..	..	6.61	6.61	11.99	25.21	..	..
41	73	13.92	..	0.76	..	0.76	13.06	16.10	..	0.38
42	74	3.84	..	..	3.84	3.84	..	7.68	..	..
43	75	1.37	..	..	1.37	1.37	..	2.74	..	..
44	76	5.93	..	..	5.93	5.93	..	11.86	..	..
45	82	38.43	..	7.45	..	7.45	30.98	60.78	..	3.72
46	83	10.31	..	..	10.31	10.31	..	20.62	..	..
47	85	11.83	..	..	11.83	11.83	..	23.66	..	..
48	86 & 138	23.77	..	..	21.56	21.56	2.21	45.33	..	..
49	88	8.19	..	2.83	..	2.83	5.36	16.68	..	1.41
50	92	48.64	..	..	28.20	28.20	20.44	76.84	..	..
51	93	2.92	..	2.92	..	2.92	..	11.68	..	1.46
52	95	2.64	..	2.64	..	2.64	..	10.56	..	1.32
53	96, 261 & I. 11 & 47.	648.53	..	25.66	195.67	221.33	427.20	921.18	..	12.83
54	98	9.06	..	..	5.11	5.11	9.06	9.06	..	..
55	100	5.11	..	..	4.56	4.56	10.32	19.44	..	..
56	101	14.88	..	..	25.44	25.44	1.46	52.34	..	..
57	103	26.90	..	..	..	..	18.22	18.22	..	..
58	105	18.22	..	..	..	..	5.09	5.09	..	..
59	106	5.09	..	..	..	..	..	..	..	..
60	109	4.17	..	..	4.17	4.17	..	8.34	..	..
Total		1,208.35	30.47	47.37	388.90	474.84	733.51	1,856.87	19.74	23.68

KURE.

village of Bellary taluk.

surrendered at full rates.

surrendered at full rates.			Will the full surrender reduce this holding to the equivalent of less than 12 acres dry.	If answer to column (15) is yes, the actual extent to be surrendered in terms of equivalent dry.	How the extent of equivalent dry to be surrendered, will be distributed between.				Area of holding in the selected block for settlers.	Area of holding selected for collective farming.
Irrigated dry.	Total surrender in terms of equivalent dry.	The extent of holding in terms of equivalent dry after surrender.			Perennial.	Garden.	Irrigated dry.	Pure dry.		
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
8-79	17-58	62-41	No.	..	..	..	8-79	..	..	..
2-84	8-64	20-62	No.	..	..	..	4-32	..	..	..
5-01	10-02	78-79	No.	..	..	..	5-01	..	35-41	..
..	12-00	40-96	No.	..	..	..	..	..	..	3-00
4-60	4-00	37-09	No.	..	..	..	6-00	..	..	..
2-00	17-94	14-26	No.	..	..	..	2-00	..	..	..
3-53	0-80	32-00	No.	..	..	2-72	3-53	..	..	..
..	5-96	0-80	Yes.	..	..	..	No surrender.	..	..	..
2-98	7-06	22-32	No.	..	..	..	2-98	..	..	4-46
3-53	2-34	24-20	No.	..	..	..	3-53	..	..	..
1-17	9-80	6-98	Yes.	..	..	..	No surrender.	..	..	..
4-90	5-10	46-81	No.	..	..	..	4-90	..	..	8-24
2-55	21-60	25-03	No.	..	..	..	2-55	..	..	..
..	10-48	26-17	No.	..	5-40	..	..	..	..	4-53
..	2-28	13-24	No.	..	..	2-62	..	..	..	..
1-14	..	44-85	No.	..	..	..	1-14	..	..	..
0-60	1-20	58-91	No.	..	..	..	..	1-20	4-79	..
..	..	40-75	No.	..	..	..	..	..	..	13-31
..	7-92	8-54	Yes.	4-46	1-11	..	..	..	..	..
1-69	10-34	22-17	No.	..	..	1-74	1-69	..	..	..
0-67	1-34	13-31	No.	..	..	..	..	1-34	..	..
13-30	41-94	99-84	No.	..	3-79	..	13-30	..	..	..
0-75	2-66	18-22	No.	..	..	..	1-33	..	..	..
6-84	74-00	108-33	No.	..	13-61	1-47	6-84	..	..	..
1-12	2-24	11-25	Yes.	1-49	..	..	..	1-49	..	..
..	5-96	20-36	No.	..	..	1-49	..	..	..	..
2-52	5-04	15-14	No.	..	..	..	2-52	..	..	..
0-96	1-92	5-78	Yes.	..	..	..	No surrender.	..	..	..
7-07	14-14	46-63	No.	..	..	..	7-07	..	..	..
..	17-84	36-03	No.	..	..	4-46	..	..	..	..
78-65	322-14	1,001-79	..	5-95	23-91	14-50	77-59	4-03	40-20	33-63
4-98	56-28	182-84	No.	..	11-58	..	4-98	..	..	..
..	7-36	7-40	Yes.	2-76	..	0-69	..	..	..	..
2-65	5-30	29-56	No.	..	..	..	2-65	..	..	..
1-00	2-00	13-02	No.	..	..	..	1-00	..	..	..
1-49	35-62	50-12	No.	..	8-16	..	1-49	..	..	..
4-33	8-66	37-84	No.	..	..	..	4-33	..	..	..
..	2-00	10-87	Yes.	0-87	..	0-22	..	..	..	..
1-40	2-80	8-42	Yes.	..	..	..	No surrender.	..	..	..
..	0-88	22-27	No.	..	..	0-22	..	..	..	..
1-65	3-30	21-91	No.	..	..	..	1-65	..	..	..
..	1-52	14-58	No.	..	..	..	..	1-52	..	..
0-96	1-92	5-76	Yes.	..	..	..	No surrender.	..	..	..
0-34	0-68	2-06	Yes.	..	..	..	Do.	..	..	..
1-48	2-96	8-00	Yes.	..	..	..	Do.	..	..	..
..	14-88	45-90	No.	..	..	3-72	..	..	..	..
2-58	5-16	15-46	No.	..	..	..	2-58	..	..	..
2-96	5-92	17-74	No.	..	..	..	2-96	..	..	..
5-39	10-78	34-55	No.	..	..	..	5-39	..	..	..
..	5-64	11-04	Yes.	4-68	..	1-17	..	..	5-36	..
7-05	14-10	62-74	No.	..	..	..	7-05	..	..	..
..	5-84	5-84	Yes.	..	..	..	No surrender.	..	..	..
..	5-28	5-28	Yes.	..	..	..	Do.	..	..	..
48-92	149-16	772-02	No.	..	..	12-83	48-92	..	11-98	3-11
..	..	9-06	No.	..	..	..	..	..	9-06	..
1-28	2-56	7-66	Yes.	..	..	..	No surrender.	..	..	..
1-14	2-28	17-16	No.	..	..	..	1-14	..	..	..
6-36	12-72	39-62	No.	..	..	..	6-36	..	..	..
..	..	18-22	..	..	..	..	..	..	..	7-64
..	..	6-09	..	..	..	..	..	..	..	1-09
1-04	2-08	6-26	Yes.	..	..	..	No surrender.	..	..	..
97-00	367-68	1,489-19	..	8-31	19-74	18-85	90-50	1-52	26-40	11-84

\* Money.

## Experimental localization in Yemmiganur

Serial number.	Holding number.	Total extent of holding.	Irrigable extent.				Extent to be			
			Perennial.	Garden.	Irrigated dry.	Total.	Pure dry area.	Dry equivalent.	Perennial.	Garden.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
61	112	6-24			6-24	6-24		12-48		
62	113	8-88			5-44	5-44	3-44	14-32		
63	115	2-34	8-34			8-34		33-36	4-17	
64	116	17-98			10-48	10-48	7-50	28-46		
65	117	37-82			11-56	11-56	26-26	49-38		
66	118	3-48			3-48	3-48		6-96		
67	119	11-18					11-18	11-18		
68	121	13-40			13-40	13-40		26-80		
69	123	18-59			18-59	18-59		37-00		
70	124 & I. 49.	28-29					28-29	28-29		
71	125	13-18					13-18	13-18		
72	127	5-71			5-71	5-71		11-42		
73	129	7-54					7-54	7-54		
74	130	5-37		5-37		5-37		21-48		2-68
75	132	13-64			4-12	4-12	9-52	17-76		
76	133 & I. 101.	38-35		0-70		0-70	37-65	40-45		0-35
77	134	5-21			5-21	5-21		10-42		
78	135	0-68			0-68	0-68		1-36		
79	139	29-20			13-94	13-94	15-26	43-14		
80	141	15-62			15-33	15-33	0-29	30-95		
81	142	13-02			13-02	13-02		26-04		
82	144 & I. 117.	28-05			7-04	7-04	21-91	35-99		
83	145	4-99			4-99	4-99		9-98		
84	146	5-87			5-87	5-87		11-74		
85	148	7-49			7-49	7-49		14-98		
86	149	16-89			4-84	4-84	12-05	21-73		
87	150	5-20			5-20	5-20		10-40		
88	151	2-43			2-43	2-43		4-86		
89	152 & I. 125.	23-95			10-48	10-48	13-47	3-43		
90	153, 600 & I. 98.	89-86		2-35	9-99	12-34	77-52	106-90		1-17
Total		487-26	8-34	8-42	185-44	202-20	285-06	722-08	4-17	4-20
91	155	7-40					7-40	7-40		
92	156	18-14			9-39	9-39	8-75	27-53		
93	163	16-86			7-13	7-13	8-73	22-99		
94	167	4-04			2-41	2-41	1-63	6-45		
95	168	25-10	12-15			12-15	12-05	61-55	6-07	
96	171	73-30			49-23	49-23	24-07	122-53		
97	172	13-79			13-79	13-79		27-58		
98	174	22-15					22-15	22-15		
99	180 & I. 43.	1,329-03	43-60	37-51	418-97	495-08	833-95	1,986-33	21-80	18-75
100	181 & I. 52.	207-31	24-54		85-39	109-93	97-38	366-32	12-27	
101	182	5-43			5-43	5-43		10-86		
102	183	10-42			10-42	10-42		20-84		
103	186	22-61			15-55	15-05	7-06	38-16		
104	189	20-83			20-83	20-83		41-66		
105	190	1-72			1-72	1-72		3-44		
106	191	18-91			10-76	15-56	3-15	34-67		
107	192	5-28			5-28	5-28		10-56		
108	193	30-10					30-10	30-10		
109	194	17-21					17-21	17-21		
110	195 & I. 110.	50-78			2-30	2-30	48-48	53-08		
111	196	34-37			34-37	34-37		68-74		
112	198	2-11			1-34	1-34		3-45		
113	200 & I. 75.	53-36		0-84	51-93	52-77	0-59	107-81		0-42
114	201	82-74			68-89	68-89	13-85	151-63		
115	202	3-35			3-35	3-35		6-70		
116	205	28-98			14-77	14-17	14-81	43-15		
117	207	8-16	8-16			8-16		32-64	4-08	
118	209	17-14		1-40		1-40	15-74	21-34		0-70
119	210	5-98			3-06	3-06	2-92	9-04		
120	217	32-49		8-90		8-90	23-59	59-19		4-45
Total		2,168-09	88-45	48-65	836-71	972-81	1,196-28	3,415-10	44-22	24-32

TRE—cont.

Village of Bellary taluk—cont.

Surrendered at full rates.					How the extent of equivalent dry to be surrendered will be distributed between					Area of holding in the selected block for settlers.	Area of holding selected for collective farming.
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)		
Irrigated dry.	Total surrender in terms of equivalent dry.	The extent of holding in terms of equivalent dry after surrender.	Will the full surrender reduce this holding to the equivalent of less than 12 acres dry.	If answer to column (3) is yes, the actual extent to be surrendered in terms of equivalent dry.	Perennial.	Garden.	Irrigated dry.	Pure dry.			
156	3-12	9-36	Yes.	0-42	..	..	0-24	..	..	..	
136	2-72	11-60	Yes.	2-32	..	..	1-16	..	..	..	
..	16-68	16-68	No.	..	..	4-17	..	..	..	..	
262	5-24	23-22	No.	..	..	..	2-62	..	..	..	
280	5-78	43-60	No.	..	..	..	2-80	..	26-26	7-50	
097	1-94	5-02	Yes.	..	..	..	No surrender.	..	..	..	
..	..	11-18	..	..	..	..	..	..	6-50	..	
335	6-70	20-10	No.	..	..	..	3-35	..	..	..	
462	9-24	27-76	No.	..	..	..	4-62	..	..	..	
..	..	28-29	..	..	..	..	..	..	..	13-92	
..	..	13-18	..	..	..	..	..	..	13-18	..	
143	2-86	8-56	Yes.	..	..	..	No surrender.	..	..	..	
..	..	7-54	..	..	..	..	..	..	7-54	..	
..	10-72	10-76	Yes.	9-48	..	2-37	..	..	..	..	
103	2-06	15-70	No.	..	..	..	1-03	..	..	..	
..	1-40	39-05	No.	..	..	..	..	1-40	..	..	
130	2-60	7-82	Yes.	..	..	..	No surrender.	..	..	..	
017	0-34	1-02	Yes.	..	..	..	Do.	..	..	..	
348	6-96	36-18	No.	..	..	..	3-48	..	..	..	
383	7-66	23-29	No.	..	..	..	3-83	..	..	..	
325	6-50	19-54	No.	..	..	..	3-25	..	..	..	
176	3-52	32-47	No.	..	..	..	1-76	..	21-91	..	
125	2-50	7-48	Yes.	..	..	..	No surrender.	..	..	..	
147	2-74	8-80	Yes.	..	..	..	Do.	..	..	..	
187	3-74	11-24	Yes.	2-98	..	..	1-49	..	..	..	
121	2-42	19-31	No.	..	..	..	1-21	..	..	..	
130	2-60	7-80	Yes.	..	..	..	No surrender.	..	..	..	
061	1-22	3-64	Yes.	..	..	..	Do.	..	..	..	
262	5-24	29-10	No.	..	..	..	2-62	..	..	..	
250	9-68	97-22	No.	..	..	1-17	2-50	..	59-91	..	
46-45	126-38	596-60	..	15-26	4-17	3-54	36-05	1-40	135-30	21-42	
..	..	7-40	..	..	..	..	..	..	..	3-34	
235	4-70	22-83	No.	..	..	..	2-35	..	..	..	
178	3-56	19-43	No.	..	..	..	1-78	..	8-78	..	
060	1-20	5-25	Yes.	..	No surrender.	..	..	..	1-63	..	
..	24-28	37-27	No.	..	6-07	..	..	..	..	..	
1231	24-62	97-91	No.	..	..	..	12-31	..	..	..	
345	6-90	20-68	No.	..	..	..	3-45	..	..	..	
..	..	22-15	..	..	..	..	..	..	..	..	
180-49	369-18	1,617-15	No.	..	21-80	18-75	103-49	..	178-57	10-90	
2135	91-78	274-54	No.	..	12-27	..	21-35	..	11-05	46-82	
136	2-72	8-14	Yes.	..	..	..	No surrender.	..	..	..	
261	5-22	15-62	No.	..	..	..	2-61	..	..	..	
389	7-78	30-31	No.	..	..	..	3-89	..	..	..	
521	10-42	31-24	No.	..	..	..	5-21	..	..	..	
043	0-86	2-58	Yes.	..	..	..	No surrender.	..	..	..	
394	7-88	26-70	No.	..	..	..	3-94	..	..	..	
132	2-64	7-92	Yes.	..	..	..	No surrender.	..	..	..	
..	..	30-10	..	..	..	..	..	..	..	7-69	
..	..	17-21	..	..	..	..	..	..	17-21	..	
058	1-16	51-92	No.	..	..	..	..	8-16	..	..	
859	17-18	51-58	No.	..	..	..	1-59	..	..	..	
034	0-68	2-77	Yes.	..	..	..	No surrender.	..	..	..	
1208	27-64	80-17	No.	..	..	..	13-82	..	..	..	
1722	34-44	117-19	No.	..	..	..	17-22	..	..	..	
084	1-68	5-02	Yes.	..	..	..	No surrender.	..	..	..	
354	7-08	36-07	No.	..	..	..	3-54	..	0-81	..	
..	16-32	16-32	No.	..	4-08	..	..	..	..	..	
..	2-80	18-54	No.	..	..	0-70	..	..	..	3-33	
077	1-54	7-50	Yes.	..	No surrender.	..	..	..	2-92	..	
..	17-80	41-39	No.	..	..	4-45	..	..	..	..	
208-95	692-06	2,723-04	..	..	44-22	23-90	203-55	8-16	220-92	72-08	

\* Money.

Experimental localization in Yemmiganur

Irrigable extent.

Extent to be

Serial number.	Holding number.	Total extent of holding.	Irrigable extent.					Extent to be		
			Perennial.	Garden.	Irrigated dry.	Total.	pure dry area.	Dry equivalent.	Perennial.	Garden.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
121	218, I. 120 & I. 14.	63.72	..	..	33.58	33.58	30.14	97.30	..	..
122	219	20.72	20.72	..	..	20.72	..	82.98	10.36	..
123	221	9.92	..	..	..	..	9.92	9.92	..	..
124	225	18.66	..	..	7.50	7.50	11.16	26.16	..	..
125	226	6.50	..	..	6.50	6.50	..	13.00	..	..
126	230	0.85	..	..	2.83	0.83	0.02	1.68	..	..
127	236	6.77	..	..	4.06	4.06	1.81	11.73	..	..
128	238	1.53	..	1.53	..	1.53	..	6.12	..	0.7
129	242	0.10	..	..	..	..	0.10	0.10	..	..
130	245	6.76	..	..	2.67	2.67	4.09	9.43	..	..
131	246 I. 99 & I. 37.	39.73	..	0.70	22.34	23.04	16.69	64.17	..	0.2
132	247	4.26	4.26	..	..	4.26	..	17.04	2.18	..
133	248	16.31	..	..	16.31	16.31	..	32.62	..	..
134	251	34.80	..	1.34	..	1.34	33.46	38.82	..	0.6
135	253	7.83	..	..	3.42	3.42	4.41	11.25	..	..
136	258	21.03	..	..	6.31	6.31	14.72	27.34	..	..
137	259	8.07	..	..	3.61	3.61	4.46	11.68	..	..
138	263	20.41	..	..	5.35	5.35	15.06	25.76	..	..
139	264	12.33	..	..	..	..	12.33	12.33	..	..
140	265	13.71	..	..	6.92	6.92	6.79	20.63	..	..
141	266	31.71	..	..	7.88	7.88	23.83	39.59	..	..
142	267	3.49	..	..	3.49	3.49	..	6.98	..	..
143	268	4.06	..	..	4.06	4.06	..	8.12	..	..
144	270 & I. 63	67.93	..	2.69	56.27	58.96	8.97	132.27	..	1.8
145	272	38.87	..	..	..	..	38.87	38.87	..	..
146	273	6.00	..	..	6.00	6.00	..	12.00	..	..
147	274 & 303	69.39	..	..	28.83	28.83	40.56	98.22	..	..
148	275	12.51	..	0.43	0.64	10.07	2.44	23.44	..	0.2
149	278, 499 & I. 42.	84.59	..	..	61.38	61.38	23.21	145.97	..	..
150	279	4.92	..	..	..	..	4.92	4.62	..	..
Total		637.18	24.98	6.60	297.85	329.52	307.66	1,030.04	12.40	3.36
151	286 & I. 21	11.62	..	..	7.85	7.85	3.77	19.47	..	..
152	287	6.15	6.15	..	..	6.15	..	24.60	3.07	..
153	288	15.29	..	..	10.57	10.57	4.72	25.86	..	..
154	289	14.74	..	..	14.74	14.74	..	29.48	..	..
155	290	2.39	..	2.39	..	2.39	..	9.56	..	1.19
156	292	12.67	..	..	7.41	7.41	5.26	20.08	..	..
157	293 & I. 15	37.29	..	..	5.14	5.14	32.15	42.43	..	..
158	295	8.88	..	..	3.12	3.12	5.76	12.00	..	..
159	296	5.90	..	..	5.90	5.90	..	11.80	..	..
160	297	39.37	21.21	..	..	21.21	18.16	103.00	10.60	..
161	300	6.59	..	..	6.59	6.59	..	13.18	..	..
162	302	15.92	..	..	..	..	15.92	15.92	..	..
163	304	14.30	..	..	8.27	8.27	6.12	22.66	..	..
164	306	10.20	10.20	..	..	10.20	..	40.80	5.10	..
165	309	17.48	..	1.30	..	..	8.04	29.52	..	0.65
166	312	5.88	..	..	5.38	5.38	..	10.78	..	..
167	314	61.68	3.17	..	5.53	8.70	52.98	76.72	1.58	..
168	315 & I. 112	33.38	..	..	0.74	0.74	32.64	34.12	..	..
169	319 & I. 70	40.89	..	1.82	28.48	30.30	10.50	74.74	..	0.91
170	321	7.95	..	..	7.95	7.95	..	15.90	..	..
171	325	1.17	..	0.74	..	0.74	0.43	3.39	..	0.37
172	326 & I. 25	47.07	..	..	..	..	47.07	47.07	..	..
173	330	6.34	..	..	2.61	2.61	3.73	8.95	..	..
174	332	18.46	..	..	10.07	10.07	8.39	28.53	..	..
175	333	14.68	..	..	14.68	14.68	..	29.36	..	..
176	336	27.18	..	..	8.59	8.59	18.59	35.77	..	..
177	342	10.33	..	..	10.33	10.33	..	20.66	..	..
178	343	21.61	10.00	1.20	11.78	13.08	7.68	39.99	0.50	0.60
179	345	12.55	..	..	12.55	12.55	..	25.10	..	..
180	346	16.46	..	..	..	..	16.46	16.46	..	..
Total		543.92	41.73	7.45	196.42	245.60	298.32	887.88	20.85	3.72

KURE—cont.

village of Bellary taluk—cont.

Surrendered at full rates.

Irrigated dry. (12)	Total surrender in terms of equivalent dry. (13)	The extent of holding in terms of equivalent dry after surrender. (14)	Will the full surrender reduce this holding to the equivalent of less than 12 acres dry. (15)	If answer to column (1) is yes, the actual extent to be surrendered in terms of equivalent dry. (16)	How the extent of equivalent dry to be surrendered will be distributed between				Area of holding in the selected block for settlers. (21)	Area of holding selected for collective farming. (22)
					Perennial. (17)	Garden. (18)	Irrigated dry. (19)	Pure dry. (20)		
8.40	16.80	80.50	No.	..	..	..	8.40	..	5.95	..
..	41.44	41.44	No.	..	10.36	..	..	..	4.59	..
..	..	9.92	..	..	..	..	..	..	..	..
1.88	3.76	22.40	No.	..	..	..	1.88	..	..	..
1.63	3.26	9.74	Yes.	1.00	..	..	0.50	..	..	..
0.21	0.42	1.26	Yes.	..	..	No surrender.	..	..	..	..
1.24	2.48	9.25	Yes.	..	..	Do.	..	..	..	..
..	3.04	3.08	Yes.	..	..	Do.	..	..	..	..
..	..	0.10	..	..	..	..	..	..	..	0.10
0.67	1.34	8.09	Yes.	..	..	No surrender.	..	..	..	..
5.59	12.58	51.59	No.	..	..	6.29	..	6.43	..	..
..	8.52	8.52	Yes.	5.04	1.26	..	..	..	..	..
4.08	8.16	24.46	No.	..	..	4.08	..	..	..	..
..	2.68	36.14	No.	..	..	..	..	..	..	..
0.86	1.72	9.53	Yes.	..	0.67	No surrender.	..	..	..	..
1.58	3.16	24.18	No.	..	..	1.58	..	..	..	..
0.90	1.80	9.88	Yes.	..	..	No surrender.	..	..	..	..
1.34	2.68	23.08	No.	..	..	1.34	..	..	..	..
..	..	12.33	..	..	..	..	..	12.33	..	..
1.73	3.46	17.17	No.	..	..	1.73	..	1.86	..	..
1.97	3.94	35.65	No.	..	..	1.97	..	..	..	..
0.87	1.74	5.24	Yes.	..	..	No surrender.	..	..	..	..
1.02	2.04	6.08	Yes.	..	..	Do.	..	..	..	..
14.07	33.54	98.73	No.	..	..	1.35	14.07	..	18.32	..
..	..	38.87	..	..	..	..	..	..	..	..
1.50	3.00	9.00	Yes.	..	..	No surrender.	..	..	..	..
7.21	14.42	83.80	No.	..	..	7.21	..	..	..	..
..	..	..	..	..	..	..	..	..	..	..
2.41	5.70	17.74	No.	..	..	2.85	..	..	..	..
15.35	30.70	115.27	No.	..	..	15.35	..	..	..	..
..	..	4.62	..	..	..	..	..	4.62	..	..
74.51	212.38	817.66	..	6.04	11.62	2.02	67.25	..	54.10	0.10
1.96	3.92	15.55	No.	..	..	1.96	..	..	..	..
..	12.28	12.32	No.	..	3.07	..	..	..	..	..
2.64	5.28	20.58	No.	..	..	2.64	..	..	..	..
3.69	7.38	22.10	No.	..	..	3.69	..	..	..	..
..	4.76	4.80	Yes.	..	..	No surrender.	..	..	..	..
1.85	3.70	16.38	No.	..	..	1.85	..	..	..	..
1.79	3.58	38.85	No.	..	..	1.79	..	6.68	..	..
0.78	1.56	10.44	Yes.	..	..	No surrender.	..	..	..	..
1.48	2.96	8.84	Yes.	..	..	Do.	..	..	..	..
..	42.40	60.60	No.	..	10.60	..	..	..	..	..
1.65	3.36	9.88	Yes.	1.18	..	0.59	..	15.92	..	..
..	..	15.92	..	..	..	..	..	..	..	..
2.07	4.14	18.52	No.	..	..	2.07	..	..	..	..
..	20.40	20.40	No.	..	5.10	..	..	..	..	..
2.03	6.66	22.86	No.	..	..	0.65	2.03	..	..	..
1.35	2.70	8.06	Yes.	..	..	No surrender.	..	..	..	..
1.38	9.08	67.64	No.	..	1.58	1.38	..	..	8.10	..
0.19	0.38	33.74	No.	..	..	0.19	..	..	..	..
7.12	17.88	56.86	No.	..	..	0.91	7.12	..	..	..
1.99	3.98	11.92	Yes.	3.90	..	1.95	..	..	..	..
..	1.48	1.91	Yes.	..	..	No surrender.	..	..	..	..
..	..	47.07	..	..	..	..	..	24.44	..	..
0.65	1.30	7.65	Yes.	..	..	No surrender.	..	..	..	..
2.52	5.04	23.49	No.	..	..	2.52	..	..	..	..
3.67	7.34	22.02	No.	..	..	3.67	..	..	..	..
2.15	4.30	31.47	No.	..	..	2.15	..	..	10.78	..
2.58	5.16	15.50	No.	..	..	2.58	..	..	..	..
2.95	10.30	29.69	No.	..	0.50	0.60	2.95	7.63	..	..
3.14	6.28	18.82	No.	..	..	3.14	..	..	..	..
..	..	16.46	..	..	..	..	..	..	..	6.81
684.0	187.54	690.34	..	5.08	20.85	2.16	44.27	..	54.67	49.63

*Experimental localization in Yemmiganu*

Serial number.	Holding number.	Total extent of holding.	Irrigable extent.						Extent to be	
			Perennial.	Garden.	Irrigated dry.	Total.	Pure dry area.	Dry equivalent.	Perennial	Garden.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
181	350	10.51	..	..	5.03	5.03	5.48	15.34	..	..
182	351 & I. 90.	69.34	..	0.69	3.33	4.02	65.32	74.74	..	0.34
183	352	10.63	..	..	..	..	10.63	10.63	..	..
184	353	7.13	..	..	7.13	7.13	..	14.26	..	..
185	354	15.96	..	..	6.56	6.56	9.40	22.52	..	..
186	355	9.59	..	..	4.78	4.78	4.81	14.37	..	..
187	356	29.81	..	..	..	..	29.81	29.81	..	..
188	358	10.89	..	..	..	..	10.89	10.89	..	..
189	362 & I. 92.	21.42	..	..	2.20	2.20	19.22	23.62	..	..
190	364	16.01	..	..	9.44	9.44	6.57	25.45	..	..
191	365	34.25	..	0.20	..	0.20	34.05	34.85	..	0.10
192	368	10.47	..	..	10.44	10.44	0.03	20.91	..	..
193	372	30.11	..	..	..	..	30.11	30.11	..	..
194	375	27.69	..	..	18.89	18.89	8.80	46.58	..	..
195	377	11.56	..	..	11.56	11.56	..	23.12	..	..
196	379	4.91	..	..	..	..	4.91	4.91	..	..
197	381	6.91	..	..	6.91	6.91	..	13.82	..	..
198	383	21.85	..	..	21.85	21.85	..	43.70	..	..
199	384	7.37	..	..	7.37	7.37	..	14.74	..	..
200	385	11.18	..	..	11.18	11.18	..	22.36	..	..
201	390	18.22	..	..	16.33	16.33	1.89	34.55	..	..
202	393 & I. 31.	20.44	..	..	8.53	8.53	11.91	28.97	..	..
203	398	18.41	..	..	3.21	3.21	15.20	21.62	..	..
204	399	6.81	..	..	6.81	6.81	..	13.62	..	..
205	400	31.38	16.81	..	16.91	16.91	14.57	81.81	8.40	..
206	401	11.23	..	..	11.23	11.23	..	22.46	..	..
207	403	1.36	..	..	1.36	1.36	..	2.72	..	..
208	405	7.02	..	..	7.02	7.02	..	14.04	..	..
209	408	19.32	..	..	13.65	13.65	5.67	32.97	..	..
210	409 & I. 57.	32.82	..	..	7.20	7.20	25.62	40.02	..	..
Total ..		534.60	16.81	0.89	202.01	219.71	314.80	739.71	8.40	0.45
211	411	6.57	..	..	6.57	6.57	..	13.14	..	..
212	412	7.00	..	..	7.00	7.00	..	14.00	..	..
213	417 & I. 100.	38.03	..	2.22	..	2.22	30.86	39.74	..	1.11
214	418	3.17	..	..	3.17	3.17	..	6.34	..	..
215	420	22.71	..	0.91	6.96	7.87	14.84	32.40	..	0.45
216	421	34.12	..	..	15.82	15.82	18.30	49.94	..	..
217	423 & I. 118.	13.64	..	3.45	3.20	5.74	6.00	27.28	..	1.72
218	424	8.05	..	..	..	..	8.05	8.05	..	..
219	426	11.76	11.76	..	..	11.76	..	47.04	5.88	..
220	429	2.28	..	..	2.28	2.28	..	4.56	..	..
221	431	3.07	..	..	3.07	3.07	..	6.14	..	..
222	433	7.74	..	..	7.74	7.74	..	15.48	..	..
223	434 & I. 33.	110.64	..	..	32.4	32.40	78.24	143.04	..	..
224	436	18.71	..	..	6.19	6.19	12.52	24.90	..	..
225	437	20.77	..	..	15.52	15.52	5.25	36.29	..	..
226	439	9.92	..	..	9.92	9.92	..	19.84	..	..
227	440	6.49	..	..	6.49	6.49	..	12.98	..	..
228	441	9.19	8.22	..	..	..	0.97	33.85	4.11	..
229	443	2.73	..	..	2.73	2.73	..	5.46	..	..
230	445	7.88	..	..	1.52	1.52	6.36	9.40	..	..
231	447	4.21	4.21	..	..	4.21	..	16.84	2.11	..
232	449	11.52	..	..	11.52	11.52	..	23.04	..	..
233	450	8.52	..	..	8.52	8.52	..	17.04	..	..
234	454	2.62	..	2.62	..	2.62	..	10.48	..	1.31
235	455	2.36	..	..	2.18	2.18	0.18	4.54	..	..
236	459	2.19	..	2.19	..	2.19	..	8.76	..	1.10
237	460	0.52	..	0.52	..	0.52	..	2.08	..	0.26
238	461	20.83	..	..	20.03	20.88	41.66	..	..	4.09
239	462	8.17	..	8.17	..	7.17	..	32.68	..	1.77
240	463	3.54	..	3.54	..	3.54	..	14.16	..	..
Total ..		404.00	24.19	23.62	173.72	221.53	182.47	721.15	12.10	11.81

## XURE—cont.

## village of Bellary taluk—cont.

surrendered at full rates.

Irrigated dry.	Total surrender in terms of equivalent dry.	The extent of holding in terms of equivalent dry after surrender.	Will the full surrender reduce this holding to the equivalent of less than 12 acres dry.	If answer to column (15) is yes, the actual extent to be surrendered in terms of equivalent dry.	How the extent of equivalent dry to be surrendered will be distributed between.				Area of holding in the selected block for settlers.	Area of holding selected for collective farming.
					Perennial.	Garden.	Irrigated dry.	Pure dry.		
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1-26	2-52	13-02	No.				1-28			
0-83	3-06	71-65	No.				1-53			
		10-63								10-63
1-78	3-56	10-70	Yes.	2-26			1-13			
1-64	3-28	19-24	No.				1-64		0-94	
1-20	2-40	11-97	Yes.	2-37			1-19			
		29-81							29-81	
		10-89							10-89	
0-55	1-10	22-52	No.					1-10		
2-36	4-72	20-73	No.				2-36			
	0-40	34-45	No.			0-10			25-11	
2-61	5-22	15-69	No.				2-61			
		30-11								2-63
4-72	9-44	37-14	No.				4-72			
2-89	5-78	17-34	No.				2-89			
		4-91							4-91	
1-73	3-46	10-36	Yes.	1-82			0-91			
5-46	10-92	32-78	No.				5-46			
1-84	3-68	11-06	Yes.	2-74			1-37			
2-80	5-60	16-76	No.				2-80			
4-08	8-16	26-39	No.				4-08			
2-13	4-26	24-71	No.				2-13			
0-80	1-60	20-02	No.				0-80			
1-70	3-40	10-22	Yes.	1-62			0-81			
	33-60	48-21	No.		8-40					
2-81	5-62	16-84	No.				2-81			
0-34	0-68	2-04	Yes.				No surrender.			
1-76	3-52	10-52	Yes.	2-04			1-02			
3-41	6-82	26-15	No.				3-41			5-67
1-80	3-60	36-42	No.				1-80			
50-50	136-40	653-31		12-85	8-40	0-10	46-73	1-10	71-66	18-93
1-64	3-28	9-86	Yes.	1-14			0-57			
1-75	3-50	10-50	Yes.	2-00			1-00			
	4-44	35-30	No.			1-11			10-94	
0-79	1-58	4-76	Yes.				No surrender.			
1-74	5-28	27-12	No.				2-64			
3-96	7-92	42-02	No.				3-96			
0-82	8-52	18-76	No.			1-72	0-82			
		8-05								8-05
	23-52	23-52	No.		5-88					
0-57	1-14	3-42	Yes.				No surrender.			
0-77	1-54	4-80	Yes.				Do.			
1-94	3-88	11-60	Yes.	3-48			1-74			
8-10	16-20	126-84	No.				8-10			
1-55	3-10	21-80	No.				1-55	9-09		
3-88	7-76	27-53	No.				3-88			
2-48	4-96	14-88	No.				2-48			
1-62	3-24	9-74	Yes.	0-98			0-49			
	16-44	17-41	No.		4-11					
0-68	1-36	4-10	Yes.				No surrender.			
0-38	0-76	8-64	Yes.				Do.			
	8-44	8-40	Yes.	4-84	1-21					
2-88	5-76	17-28	No.				2-88			
2-13	4-26	12-78	No.				2-13			
	5-24	5-24	Yes.				No surrender.			
0-55	1-10	3-44	Yes.				Do.			
	4-40	4-36	Yes.				Do.			
	1-04	1-04	Yes.				Do.			
5-21	10-42	31-24	No.				5-21			
	16-36	16-32	No.			4-09				
	7-08	7-08	Yes.	2-16		0-54				
43-44	182-52	538-63		14-60	11-20	7-46	37-45		20-03	8-05

\* Money.



## Experimental localization in Yemmiganur

Serial number.	Holding number.	Total extent of holding.	Irrigable extent.						Extent to be	
			Perennial.	Garden.	Irrigated dry.	Total.	Pure dry area.	Dry equivalent.	Perennial	Garden.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
241	464 & I. 105	31.59	..	..	31.59	31.59	..	63.18	..	..
242	466	0.15	..	0.15	..	0.15	..	0.60	..	0.08
243	467	7.05	..	..	7.05	7.05	..	14.10	..	..
244	470	6.10	6.10	..	..	6.10	..	24.40	3.05	..
245	473	11.03	5.22	..	5.81	11.03	..	32.50	2.61	..
246	481	17.95	..	..	9.75	9.75	8.20	27.70	..	..
247	486 & 606	7.51	..	..	2.88	2.88	4.63	10.39	..	..
248	489	7.35	..	0.06	..	..	7.29	7.53	..	0.03
249	492	7.07	..	..	..	..	7.07	7.07	..	..
250	495	12.83	..	..	..	..	12.83	12.83	..	..
251	497	20.75	10.99	..	..	10.99	9.76	53.72	5.49	..
252	498	18.24	..	..	18.24	18.24	..	36.48	..	..
253	501	2.56	..	2.56	..	2.56	..	10.24	..	1.23
254	503 & I. 62	41.46	..	..	13.51	13.51	27.95	54.97	..	..
255	506	4.84	..	..	4.84	4.84	..	9.68	..	..
256	508	25.99	..	..	13.45	13.45	12.54	39.44	..	..
257	511	15.77	..	..	15.29	15.29	9.48	31.06	..	..
258	517	4.98	4.98	..	..	4.98	..	19.92	2.49	..
259	519	7.51	..	..	7.51	7.51	..	15.02	..	..
260	524	5.22	5.22	..	..	5.22	..	20.88	2.61	..
261	525	5.23	..	..	5.23	5.23	..	10.46	..	..
262	530	14.88	1.09	..	2.34	3.43	11.45	20.49	0.54	..
263	536	3.58	..	..	3.58	3.58	..	7.16	..	..
264	540 & I. 58	27.71	..	..	..	..	27.71	27.71	..	..
265	541 & I. 95	4.64	..	1.97	2.67	4.64	..	13.22	..	0.93
266	544	61.70	..	1.02	5.23	6.25	55.45	69.99	..	9.51
267	546	14.24	..	..	11.17	11.17	3.07	25.41	..	..
268	549	6.30	..	..	6.30	6.30	..	12.60	..	..
269	550	13.41	6.42	..	..	6.42	6.99	32.67	3.21	..
270	551	5.35	..	..	5.35	5.35	..	10.70	..	..
Total ..		412.99	40.02	5.76	171.79	217.57	195.42	722.12	20.00	2.88
271	553	15.35	..	..	15.35	15.35	..	30.70	..	..
272	554	21.44	..	..	14.89	14.89	6.55	36.33	..	..
273	555	6.35	..	..	3.78	3.78	2.57	10.13	..	..
274	558	38.21	23.73	..	9.90	33.63	54.58	119.30	11.86	..
275	559	2.95	..	..	..	..	2.95	2.95	..	..
276	561	1.94	..	..	1.94	1.94	..	3.88	..	..
277	563	9.75	..	..	9.75	9.75	..	19.50	..	..
278	566	12.37	..	..	2.22	2.22	10.15	14.59	..	..
279	567	5.43	..	..	2.74	2.74	2.69	8.17	..	..
280	568	23.35	..	2.50	15.57	18.07	5.28	46.42	..	1.25
281	571 & I. 83	12.75	..	..	8.26	8.26	4.49	21.01	..	..
282	572	11.53	..	..	11.53	11.53	..	23.06	..	..
283	574	59.23	..	7.91	..	7.91	51.32	82.96	..	3.96
284	576	12.55	..	12.55	..	..	..	60.20	..	6.28
285	577	4.49	4.49	..	..	..	..	17.96	2.25	..
286	581	9.71	..	..	..	..	9.71	9.71	..	..
287	582	7.80	..	..	7.80	7.80	..	15.60	..	..
288	585	11.08	..	..	11.08	11.08	..	22.16	..	..
289	586	2.90	..	..	2.90	2.90	..	5.80	..	..
290	588	1.78	..	..	1.32	1.32	0.46	3.10	..	..
291	589	3.61	..	..	1.63	1.63	1.98	5.24	..	..
292	595 & I. 71	21.61	..	..	7.11	7.11	14.50	23.72	..	..
293	597 & I. 46	57.99	..	..	10.19	10.19	46.90	67.23	..	..
294	598	45.99	..	4.38	28.62	33.00	12.99	87.75	..	2.19
295	599 & I. 48	27.49	..	..	19.52	19.52	7.97	47.01	..	..
296	601	15.96	..	..	10.03	10.03	5.93	25.99	..	..
297	603	3.98	3.98	..	..	..	..	15.92	1.99	..
298	608	4.14	..	..	..	..	4.14	4.14	..	..
299	610	16.79	..	..	12.82	12.82	3.97	29.61	..	..
300	612	11.21	..	..	4.35	4.35	6.86	15.56	..	..
Total ..		478.83	32.20	27.34	213.30	272.84	205.99	870.75	16.10	13.68

XURE—cont.

village of Bellary taluk—cont.

surrendered at full rates.				If answer to column (5) is yes, the actual extent to be surrendered in terms of equivalent dry.	How the extent of equivalent dry to be surrendered will be distributed between.				Area of holding in the selected block for settlers.	Area of holding selected for collective farming.
Irrigated dry.	Total surrender in terms of equivalent dry.	The extent of holding in terms of equivalent dry after surrender.	Will the full surrender reduce this holding to the equivalent of less than 12 acres dry.		Perennial.	Garden.	Irrigated dry.	Pure dry.		
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
7-90	15-80	47-38	No.	..	..	..	7-90	..	..	..
..	0-32	0-28	Yes.	..	..	..	No surrender.	..	..	..
1-76	3-52	10-58	Yes.	2-10	..	..	1-05	..	..	..
..	12-20	12-20	No.	..	3-05	..	..	..	..	..
1-45	13-34	19-16	No.	..	2-61	..	1-45	..	..	..
2-44	4-88	22-82	No.	..	..	..	2-44	..	..	..
0-72	1-44	8-95	Yes.	..	..	..	No surrender.	..	..	..
..	0-12	7-41	Yes.	..	..	..	Do.	..	..	..
..	..	7-07	..	..	..	..	..	..	7-07	..
..	..	12-83	..	..	..	..	..	..	..	3-23
..	21-96	31-76	No.	..	5-49	..	..	..	..	..
4-56	9-12	27-36	No.	..	..	..	4-56	..	..	..
..	5-12	5-12	Yes.	..	..	..	No surrender.	..	..	..
3-38	6-76	48-21	No.	..	..	..	3-38	..	..	13-23
1-21	2-42	7-26	Yes.	..	..	..	No surrender.	..	..	..
3-36	6-72	32-72	No.	..	..	..	3-36	..	..	..
3-82	7-64	23-42	No.	..	..	..	3-82	..	..	..
..	9-96	9-96	Yes.	7-02	1-08	..	..	..	..	..
1-88	3-76	11-26	Yes.	3-02	..	..	1-51	..	..	..
..	10-44	10-44	Yes.	8-88	2-22	..	..	..	..	..
1-31	2-62	7-84	Yes.	..	..	..	No surrender.	..	..	..
0-50	3-34	17-15	No.	..	0-54	..	..	1-18	..	..
0-90	1-80	5-36	Yes.	..	..	..	No surrender.	..	..	..
..	..	27-71	..	..	..	..	..	..	..	5-28
0-67	5-26	7-96	Yes.	1-22	..	..	0-61	..	..	*
1-31	4-66	65-33	No.	..	..	0-51	1-31	..	..	..
2-70	5-58	19-83	No.	..	..	..	2-79	..	3-04	..
1-58	3-16	9-44	Yes.	0-60	..	..	0-30	..	..	*
..	12-84	19-83	No.	..	3-21	..	..	..	..	3-67
1-34	2-68	8-02	Yes.	..	..	..	No surrender.	..	..	..
<b>42-97</b>	<b>177-46</b>	<b>544-66</b>	..	<b>23-74</b>	<b>19-10</b>	<b>0-51</b>	<b>34-48</b>	<b>1-18</b>	<b>10-11</b>	<b>25-41</b>
3-84	7-68	23-02	No.	..	..	..	3-84	..	..	..
3-72	7-44	28-89	No.	..	..	..	3-72	..	..	..
0-95	1-90	8-23	Yes.	..	..	..	No surrender.	..	..	..
2-48	52-40	66-90	No.	..	11-86	..	2-48	..	..	..
..	..	2-95	..	..	..	..	..	..	2-95	..
0-49	0-98	2-90	Yes.	..	..	..	No surrender.	..	..	..
2-44	4-88	14-62	No.	..	..	..	2-44	..	..	..
0-56	1-12	13-47	No.	..	..	..	..	1-12	..	..
0-69	1-38	6-79	Yes.	..	..	..	No surrender.	..	..	..
3-89	12-78	33-64	No.	..	..	1-25	3-89	..	..	..
2-07	4-14	16-87	No.	..	..	..	2-07	..	..	..
2-88	5-76	17-30	No.	..	..	..	2-88	..	..	..
..	15-84	67-12	No.	..	..	3-96	..	..	..	..
..	25-12	25-08	No.	..	..	6-28	..	..	..	..
..	9-00	8-96	Yes.	5-96	1-49	..	..	..	..	..
..	..	9-71	..	..	..	..	..	..	9-71	..
1-95	3-90	11-70	Yes.	3-60	..	..	1-80	..	..	..
2-77	5-54	16-62	No.	..	..	..	2-77	..	..	..
0-73	1-46	4-34	Yes.	..	..	..	No surrender.	..	..	..
0-33	0-66	2-44	Yes.	..	..	..	Do.	..	..	..
0-41	0-82	4-42	Yes.	..	..	..	Do.	..	1-03	..
1-78	3-56	25-16	No.	..	..	..	1-78	..	..	..
2-55	5-10	62-18	No.	..	..	..	2-55	..	..	..
7-16	23-08	64-67	No.	..	..	2-19	7-16	..	..	1-95
4-88	9-76	37-25	No.	..	..	..	4-88	..	..	..
2-51	5-02	20-97	No.	..	..	..	2-51	..	..	..
..	7-96	7-96	Yes.	3-92	0-98	..	..	..	..	..
..	..	4-14	..	..	..	..	..	..	4-14	..
3-21	6-42	23-19	No.	..	..	..	3-21	..	..	..
1-09	2-18	13-38	No.	..	..	..	1-09	..	..	6-86
<b>53-38</b>	<b>225-88</b>	<b>644-87</b>	..	<b>13-48</b>	<b>14-33</b>	<b>18-68</b>	<b>49-07</b>	<b>1-12</b>	<b>18-78</b>	<b>8-31</b>

\* Money.

*Experimental localization in Yemmiganur*

Serial number.	Holding number.	Total extent of holding.	Irrigable extent.				Extent to be			
			Perennial.	Garden.	Irrigated dry.	Total.	Pure dry area.	Dry equivalent.	Perennial.	Garden.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
301	015 and 087.	14.62	..	..	9.35	9.35	5.27	23.97	..	..
302	016	13.73	..	..	..	..	13.73	13.73	..	..
303	017 & I. 119.	12.35	..	..	..	..	12.35	12.35	..	..
304	018	14.21	..	..	1.49	1.49	12.72	15.70	..	..
305	019	14.01	..	..	6.69	6.69	7.32	20.70	..	..
306	021	5.72	..	..	5.72	5.72	..	11.44	..	..
307	022 & I. 29.	21.67	..	..	..	..	21.67	21.67	..	..
308	024	16.65	..	..	..	..	16.65	16.65	..	..
309	025	22.58	..	..	13.56	13.56	9.02	36.14	..	..
310	026 & I. 28.	42.53	..	..	21.45	23.45	21.08	63.98	..	..
311	027	15.40	..	..	8.22	8.22	7.18	23.62	..	..
312	029	4.01	..	..	4.01	4.01	..	3.02	..	..
313	031	72.86	..	..	39.24	39.24	33.62	112.10	..	..
314	032	8.15	..	..	8.15	8.15	..	16.30	..	..
315	033	7.23	..	..	1.90	1.90	5.32	9.13	..	..
316	034	14.60	..	..	14.60	14.60	..	29.20	..	..
317	038	1.91	..	..	..	..	1.91	1.91	..	..
318	039	2.44	..	2.44	..	2.44	..	9.76	..	1.22
319	041	5.64	..	..	5.64	5.64	..	11.28	..	..
320	043	11.13	..	..	11.13	11.13	..	22.26	..	..
321	045	9.56	..	..	9.56	9.56	..	19.12	..	..
322	046	2.05	..	..	1.42	1.42	0.63	3.47	..	..
323	049	8.71	..	..	2.54	2.54	6.17	11.25	..	..
324	052	43.71	..	..	0.10	0.10	43.61	43.81	..	..
325	053 & I. 182.	37.66	..	..	30.02	30.02	7.64	67.68	..	..
326	057	8.06	..	8.06	..	8.06	..	32.24	..	4.03
327	058	0.19	..	0.19	..	0.19	..	0.76	..	0.10
328	059	0.40	..	0.40	..	0.40	..	1.60	..	0.20
329	060	7.45	..	..	4.24	4.24	3.21	11.69	..	..
330	062	9.40	..	..	17.5	1.75	7.65	11.15	..	..
Total ..		448.03	..	11.09	200.78	211.87	236.76	682.68	..	5.55
331	663 & I. 72.	18.08	..	1.92	..	1.92	16.16	23.84	..	0.96
332	664 & I. 102.	114.39	..	1.83	72.21	74.04	40.35	192.09	..	0.92
333	066	2.24	..	..	2.24	2.24	..	4.48	..	..
334	067	14.03	..	..	1.05	1.05	12.98	15.04	..	..
335	071	21.40	..	2.86	10.63	13.49	7.91	40.61	..	1.43
336	073	3.00	..	3.00	..	3.00	..	12.00	..	1.50
337	074	0.13	..	..	0.13	0.13	..	12.26	..	..
338	077	26.80	..	..	11.36	11.36	15.44	38.16	..	..
339	078	3.85	..	..	3.85	3.85	..	7.70	..	..
340	081	14.61	..	4.88	..	4.88	9.73	29.25	..	2.44
341	082	16.04	..	..	..	..	16.04	16.04	..	..
342	084	6.41	6.41	..	..	6.41	..	25.64	320	..
343	086	5.33	..	..	5.33	5.33	..	10.66	..	..
344	090	3.07	3.07	..	..	3.07	..	12.28	1.53	..
345	091	24.18	..	..	6.02	6.02	18.16	30.20	..	..
346	094	4.26	..	..	..	..	4.26	4.26	..	..
347	096	7.88	..	..	7.88	7.88	..	15.76	..	..
348	I. 1	33.39	..	6.04	..	6.04	27.25	51.51	..	3.02
349	2	38.66	..	..	..	..	38.66	38.66	..	..
350	5	13.21	..	..	13.21	13.21	..	26.42	..	..
351	7	31.51	..	..	..	..	31.51	31.51	..	..
352	8	9.76	..	9.76	..	9.76	..	39.04	..	4.88
353	9	14.81	..	..	14.81	14.81	..	29.62	..	..
354	10	65.23	18.00	11.35	35.88	65.23	..	189.16	9.00	5.67
355	13	2.32	..	..	2.32	2.32	..	4.64	..	..
356	27	27.30	..	..	27.30	27.30	..	54.60	..	..
357	33	12.44	..	..	12.44	12.44	..	24.88	..	..
358	35	13.69	..	..	13.69	13.69	..	27.38	..	..
359	36	13.03	..	..	13.03	13.03	..	26.06	..	..
360	44	1.02	..	..	..	..	1.02	1.02	..	..
Total ..		562.07	27.48	41.64	253.38	322.50	239.57	1,022.81	13.73	20.82

XURE—cont.

village of Bellary taluk—cont.

surrendered at full rates.

Irrigated dry.		Total surrender in terms of equivalent dry.		The extent of holding in terms of equivalent dry after surrender.		Will the full surrender reduce this holding to the equivalent of less than 12 acres dry.		If answer to column (15) is yes, the actual extent to be surrendered in terms of equivalent dry.		How the extent of equivalent dry to be surrendered will be distributed between.		Area of holding in the selected block for settlers.		Area of holding selected for collective farming.	
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
2-34	4-68	19-29	No.	..	..	..	2-34	..	..	..	..	..	..	..	..
..	..	18-73	..	..	..	..	..	..	..	..	..	..	..	..	13-73
..	..	12-35	..	..	..	..	..	..	6-21	..	..	..	..	..	..
0-37	0-74	14-96	No.	..	..	..	0-37	..	..	..	..	..	..	..	..
1-67	3-34	17-36	No.	..	..	..	1-67	..	..	..	..	..	..	..	..
1-43	2-86	8-58	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
..	..	21-67	..	..	..	..	..	..	..	..	..	..	..	..	7-88
..	..	16-65	..	..	..	..	..	..	16-65	..	..	..	..	..	..
3-39	6-78	29-36	No.	..	..	..	3-39	..	..	..	..	..	..	..	..
5-36	10-72	53-26	No.	..	..	..	5-36	..	..	..	..	..	..	..	..
2-06	4-12	19-50	No.	..	..	..	2-06	..	..	..	..	..	..	..	..
1-00	2-00	6-02	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
9-81	19-62	92-48	No.	..	..	..	9-81	..	..	..	..	..	..	..	..
2-04	4-08	12-22	No.	..	..	..	2-04	..	..	..	..	..	..	..	..
0-48	0-96	8-17	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
3-65	7-30	21-90	No.	..	..	..	3-65	..	..	..	..	..	..	..	1-91
..	..	1-91	..	..	..	..	..	..	..	..	..	..	..	..	..
..	4-88	4-88	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
1-41	2-82	8-46	Yes.	..	..	..	Do.	..	..	..	..	..	..	..	..
2-78	5-56	16-70	No.	..	..	..	2-78	..	..	..	..	..	..	..	..
2-30	4-78	14-34	No.	..	..	..	2-39	..	..	..	..	..	..	..	..
0-36	0-72	2-75	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
0-64	1-28	9-97	Yes.	..	..	..	Do.	..	..	..	..	..	..	..	..
0-03	0-06	43-75	No.	..	..	..	0-03	..	..	..	..	..	..	..	..
7-51	15-02	52-66	No.	..	..	..	7-51	..	..	..	..	..	..	..	..
..	16-12	16-12	No.	..	..	..	4-03	..	..	..	..	..	..	..	..
..	0-40	0-36	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
..	0-80	0-80	Yes.	..	..	..	Do.	..	..	..	..	..	..	..	..
1-06	2-12	9-57	Yes.	..	..	..	Do.	..	..	..	..	..	..	..	..
0-44	0-88	10-27	Yes.	..	..	..	Do.	..	..	..	..	..	..	..	..
50-22	122-64	560-04	..	..	..	..	4-03	43-40	..	..	22-86	..	..	2-352	..
..	3-84	20-00	No.	..	..	..	0-96	..	..	..	..	..	..	..	..
18-05	39-78	152-31	No.	..	..	..	0-92	18-05	..	..	..	..	..	..	..
0-56	1-12	3-36	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
0-26	0-52	14-56	No.	..	..	..	0-26	..	..	..	..	..	..	..	..
2-66	11-04	29-57	No.	..	..	..	1-43	2-66	..	..	..	..	..	..	..
..	6-00	6-00	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
0-03	0-06	0-20	Yes.	..	..	..	Do.	..	..	..	..	..	..	..	..
2-84	5-68	32-48	No.	..	..	..	2-84	..	..	..	..	..	..	..	3-70
0-96	1-92	5-78	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
..	9-76	19-49	No.	..	..	..	2-44	..	..	..	..	..	..	..	5-52
..	..	16-04	..	..	..	..	..	..	..	..	..	..	..	..	6-38
..	12-80	12-84	No.	..	..	3-20	..	..	..	..	..	..	..	..	..
1-33	2-66	8-00	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
..	6-12	6-16	Yes.	0-28	0-07	..	..	..	..	..	..	..	..	..	..
1-51	3-02	27-18	No.	..	..	..	1-51	..	..	..	..	..	..	..	..
..	..	4-26	..	..	..	..	..	..	..	..	..	..	..	..	..
1-97	3-94	11-82	Yes.	3-76	..	..	1-88	..	..	..	4-26	..	..	..	..
..	12-08	39-43	No.	..	..	..	3-02	..	..	..	..	..	..	..	27-35
..	..	38-66	..	..	..	..	..	..	..	..	38-66	..	..	..	..
3-30	6-60	19-82	No.	..	..	..	3-30	..	..	..	..	..	..	..	..
..	..	31-51	..	..	..	..	..	..	..	..	31-51	..	..	..	..
..	19-52	19-52	No.	..	..	..	4-88	..	..	..	..	..	..	..	..
3-70	7-40	22-22	No.	..	..	..	3-70	..	..	..	..	..	..	..	..
8-97	76-62	112-54	No.	..	..	9-00	5-67	8-97	..	..	..	..	..	..	..
0-58	1-16	3-48	Yes.	..	..	..	No surrender.	..	..	..	..	..	..	..	..
6-88	13-66	40-94	No.	..	..	..	6-88	..	..	..	..	..	..	..	..
3-11	6-22	18-66	No.	..	..	..	3-11	..	..	..	..	..	..	..	..
3-42	6-84	20-54	No.	..	..	..	3-42	..	..	..	..	..	..	..	..
3-26	6-52	19-54	No.	..	..	..	3-26	..	..	..	..	..	..	..	1-02
..	..	1-02	..	..	..	..	..	..	..	..	..	..	..	..	..
63-34	264-88	757-93	..	4-04	12-27	19-32	59-79	..	74-43	..	43-97	..	..	..	..

\* Money.

## Experimental localization in Yemmiganur

Serial number.	Holding number.	Total extent of holding.	Irrigable extent.						Extent to be	
			Perennial.	Garden.	Irrigated dry.	Total.	Pure dry area.	Dry equivalent.	Perennial	Garden.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
361	45	14.37	..	..	..	..	14.37	14.37	..	..
362	53	6.24	..	..	..	..	6.24	6.24	..	..
363	54	17.90	..	..	..	..	17.90	17.90	..	..
364	64	7.95	..	..	5.37	5.37	2.58	12.32	..	..
365	65	18.82	..	..	18.82	18.82	..	37.64	..	..
366	67	3.87	..	..	3.87	3.87	..	7.74	..	..
367	69	3.55	..	..	3.55	3.55	..	7.10	..	..
368	76	10.16	..	..	10.16	10.16	..	20.32	..	..
369	82	5.21	..	..	1.17	1.17	4.04	6.38	..	..
370	85	1.61	..	..	1.61	1.61	..	2.22	..	..
371	88	7.11	..	..	1.26	1.26	5.85	8.37	..	..
372	89	3.42	..	..	3.42	3.42	..	6.84	..	..
373	91	1.60	..	..	1.60	1.60	..	3.20	..	..
374	93	7.19	..	..	1.51	1.51	5.68	8.70	..	..
375	96	2.94	..	..	2.94	2.94	..	5.88	..	..
376	97	7.52	..	..	7.52	7.52	..	15.04	..	..
377	108	3.19	..	..	3.19	3.19	..	6.28	..	..
378	109	2.91	..	..	2.91	2.91	..	5.82	..	..
379	113	3.51	..	..	3.51	3.51	..	7.02	..	..
380	115	1.52	..	..	1.52	1.52	..	3.04	..	..
381	121	20.54	..	..	..	..	20.54	20.54	..	..
382	128	17.02	..	1.01	2.67	3.68	13.34	22.72	..	0.50
383	131	5.00	..	5.00	..	5.00	..	20.00	..	2.50
384	134	0.77	..	..	0.77	0.77	..	1.54	..	..
385	135	7.05	..	..	7.05	7.05	..	14.10	..	..
386	141	4.58	..	4.58	..	4.58	..	18.32	..	2.92
387	142	5.49	..	..	5.49	5.49	..	10.98	..	..
388	143	4.44	..	..	4.44	4.44	..	8.88	..	..
389	144	9.26	..	..	..	..	9.26	9.26	..	..
390	145	33.76	..	..	21.07	21.07	12.69	54.83	..	..
Total		238.50	..	10.59	115.42	126.01	112.49	385.69	..	5.29
391	147	12.09	..	..	..	..	12.09	12.09	..	..
392	148	14.57	..	..	..	..	14.57	14.57	..	..
393	154	12.17	..	..	12.17	12.17	..	24.34	..	..
394	155	7.07	..	..	7.07	7.07	..	14.14	..	..
395	156	0.70	..	..	..	..	0.70	0.70	..	..
396	157	1.21	..	..	..	..	1.21	1.21	..	..
397	159	1.80	..	..	..	..	1.80	1.80	..	..
398	160	1.27	..	..	..	..	1.27	1.27	..	0.35
399	161	0.70	..	0.70	..	0.70	..	2.80	..	..
400	162	0.68	..	..	0.68	0.68	..	1.36	..	..
401	164	1.35	..	..	..	..	1.35	1.35	..	..
402	165	2.69	..	..	2.69	2.69	..	5.38	..	..
403	166	4.28	..	..	4.28	4.28	..	8.56	..	..
404	167	2.32	..	..	2.32	2.32	..	4.64	..	..
405	168	2.66	..	..	2.66	2.66	..	5.32	..	..
406	169	5.17	..	..	..	..	5.17	5.17	..	..
407	171	5.60	..	..	..	..	5.60	5.60	..	..
408	172	10.93	..	..	10.93	10.93	..	21.86	..	..
409	173	7.35	..	..	7.35	7.35	..	14.70	..	..
410	174	5.03	..	..	5.03	5.03	..	10.06	..	..
411	175	2.86	..	..	..	..	2.86	2.86	..	..
412	179	1.35	..	..	..	..	1.35	1.35	..	..
413	180	3.50	..	..	3.50	3.50	..	7.00	..	..
414	181	11.32	..	..	..	..	11.32	11.32	..	..
415	183	1.54	..	..	..	..	1.54	1.54	..	..
416	184	1.06	..	..	..	..	1.06	1.06	..	..
417	185	5.99	..	..	5.99	5.99	..	11.98	..	..
418	186	2.91	..	..	..	..	2.91	2.91	..	..
419	187	1.59	..	..	..	..	1.59	1.59	..	..
420	188	40.09	..	..	..	..	40.09	40.09	..	..
Total		171.85	..	0.70	64.67	65.37	106.48	238.62	..	0.35

XURE—cont.

village of Bellary taluk—cont.

surrendered at full rates.			Will the full surrender reduce this holding to the equivalent of less than 12 a cres dry.	If answer to column (15) is yes, the actual extent to be surrendered in terms of equivalent dry.	How the extent of equivalent dry to be surrendered will be distributed between.				Area of holding in the selected block for settlers.	Area of holding selected for collective farming.
Irrigated dry.	Total surrender in terms of equivalent dry.	The extent of holding in terms of equivalent dry after surrender.			Perennial.	Garden.	Irrigated dry.	Pure dry.		
..	..	14-37	..	..	..	..	..	..	14-37	
..	..	6-24	..	..	..	..	..	..	6-24	
..	..	17-90	..	..	..	..	..	..	17-90	
1-34	2-68	10-64	Yes.	1-32	..	..	0-66	..	3-40	
4-71	9-42	28-22	No.	..	..	..	4-71	..	5-38	
0-97	1-94	5-80	Yes.	..	..	..	No surrender.	..	..	
0-89	1-78	5-32	Yes.	..	..	..	Do.	..	..	
2-54	5-08	15-24	No.	..	..	..	2-54	..	..	
0-29	0-58	5-80	Yes.	..	..	..	No surrender.	..	..	
0-40	0-80	2-42	Yes.	..	..	..	Do.	..	..	
0-32	0-64	7-73	Yes.	..	..	..	Do.	..	..	
0-86	1-72	5-12	Yes.	..	..	..	Do.	..	..	
0-40	0-80	2-40	Yes.	..	..	..	Do.	..	..	
0-38	0-76	7-94	Yes.	..	..	..	Do.	..	..	
0-74	1-48	4-40	Yes.	..	..	..	Do.	..	5-68	
1-88	3-76	11-28	Yes.	3-04	..	..	1-52	..	..	
0-80	1-60	4-78	Yes.	..	..	..	No surrender.	..	..	
0-73	1-46	4-36	Yes.	..	..	..	Do.	..	..	
0-88	1-76	5-28	Yes.	..	..	..	Do.	..	..	
0-38	0-76	2-28	Yes.	..	..	..	Do.	..	..	
..	..	20-54	..	..	..	..	..	20-54	..	
0-67	3-34	19-38	No.	..	..	0-50	0-67	..	..	
..	10-00	10-00	Yes.	8	..	2-00	..	..	..	
0-19	0-38	1-16	Yes.	..	..	..	No surrender.	..	..	
1-76	3-52	10-58	Yes.	2-10	..	..	1-05	..	..	
..	9-16	9-16	Yes.	5-32	..	1-58	..	..	..	
1-37	2-74	8-24	Yes.	..	..	..	No surrender.	..	..	
1-11	2-22	6-66	Yes.	..	..	..	Do.	..	..	
..	..	9-26	..	..	..	..	..	..	4-40	
5-27	10-54	44-29	No.	..	..	..	5-27	..	..	
28-88	78-92	306-77	..	20-78	..	4-08	16-42	20-54	33-32	
..	..	12-09	..	..	..	..	..	..	12-09	
..	..	14-57	..	..	..	..	..	..	10-50	
3-04	6-08	18-26	No.	..	..	..	3-04	..	..	
1-77	3-54	10-60	Yes.	2-14	..	..	1-07	..	..	
..	..	0-70	..	..	..	..	..	..	0-70	
..	..	1-21	..	..	..	..	..	..	1-21	
..	..	1-80	..	..	..	..	..	..	1-80	
..	..	1-27	..	..	..	..	..	..	1-27	
..	1-40	1-40	Yes.	..	..	..	No surrender.	..	..	
0-17	0-34	1-02	Yes.	..	..	..	Do.	..	..	
..	..	1-35	..	..	..	..	..	..	1-35	
0-67	1-34	4-04	Yes.	..	..	..	No surrender.	..	..	
1-07	2-14	6-42	Yes.	..	..	..	Do.	..	..	
0-58	1-16	3-48	Yes.	..	..	..	Do.	..	..	
0-67	1-34	3-98	Yes.	..	..	..	Do.	..	..	
..	..	5-17	..	..	..	..	..	..	3-96	
..	..	5-60	..	..	..	..	..	..	5-60	
2-73	5-46	16-40	No.	..	..	..	2-73	..	..	
1-84	3-68	11-02	Yes.	2-70	..	..	1-35	..	..	
1-26	2-52	7-54	Yes.	..	..	..	No surrender.	..	..	
..	..	2-86	..	..	..	..	..	..	2-86	
..	..	1-35	..	..	..	..	..	..	1-35	
0-88	1-76	5-24	Yes.	..	..	..	No surrender.	..	..	
..	..	11-32	..	..	..	..	..	..	11-32	
..	..	1-54	..	..	..	..	..	..	1-54	
..	..	1-06	..	..	..	..	..	..	1-06	
1-50	3-00	8-98	Yes.	..	..	..	No surrender.	..	..	
..	..	2-91	..	..	..	..	..	..	2-91	
..	..	1-59	..	..	..	..	..	..	1-59	
..	..	40-09	..	..	..	..	..	40-09	..	
18-18	33-76	204-86	..	4-84	..	..	8-19	40-09	61-71	

\* Money.

*Experimental localization in Yemmiganur*

Serial number. (1)	Holding number. (2)	Total extent of holding. (3)	Irrigable extent.					Extent to be		
			Perennial. (4)	Garden. (5)	Irrigated dry. (6)	Total. (7)	Pure dry area. (8)	Dry equivalent. (9)	Perennial. (10)	Garden. (11)
30-31	..	762.09	40.55	32.86	314.61	397.02	365.07	1,323.93	24.78	16.43
30-31	..	1,208.35	39.47	47.37	388.00	474.84	733.51	1,856.87	19.74	23.68
32-33	..	487.26	8.34	8.42	185.44	202.20	285.06	722.98	4.17	4.20
32-33	..	2,168.09	88.45	48.65	835.71	972.81	1,195.28	3,415.10	44.22	24.32
34-35	..	637.18	24.08	6.60	297.85	329.52	307.66	1,030.04	12.49	3.35
34-35	..	543.92	41.73	7.45	196.42	245.60	208.32	887.88	20.85	3.72
36-37	..	534.60	16.81	0.89	202.01	219.71	314.89	789.71	8.40	0.45
36-37	..	404.00	24.19	23.62	173.72	221.53	182.47	721.15	12.10	11.81
38-39	..	412.99	40.02	5.76	171.79	217.57	195.42	722.12	20.00	2.88
38-39	..	478.83	32.20	27.34	213.30	272.84	205.99	870.75	16.10	13.68
40-41	..	449.63	..	11.09	200.78	211.87	236.76	682.68	..	5.55
40-41	..	562.07	27.48	41.64	253.38	322.50	239.57	1,022.81	13.73	20.82
42-43	..	238.50	..	10.59	115.42	126.01	112.49	335.69	..	5.29
42-43	..	171.86	..	0.70	64.67	65.37	106.48	238.62	..	0.35
Grand total ..		9058.36	393.22	273.07	3,613.10	4,279.39	4,778.97	14,670.33	196.58	136.53

ABST

ANNEXURE—cont.

Village of Bellary taluk—cont.

Surrendered at full rates.					How the extent of equivalent dry to be surrendered will be distributed between.					
Irrigated dry.	Total surrender in terms of equivalent dry.	The extent of holding in terms of equivalent dry after surrender.	Will the full surrender reduce this holding to the equivalent of less than 12 acres dry.	If answer to column (15) is yes the actual extent to be surrendered in terms of equivalent dry.	Perennial.	Garden.	Irrigated dry.	Pure dry.	Area of holding in the selected block for settlers.	Area of holding selected for collective farming.
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
78-65	332-14	1,001-70	..	5-95	23-91	11-50	77-59	4-03	40-20	33-63
97-00	367-68	1,489-10	..	8-31	19-74	18-85	90-50	1-52	26-40	11-84
46-45	126-38	596-60	..	15-26	4-17	3-54	36-05	1-40	135-30	21-42
208-95	692-06	2,723-04	..	..	44-22	23-90	203-55	1-16	220-92	72-08
74-51	212-38	817-66	..	6-04	11-62	2-02	67-25	..	54-10	0-10
49-63	197-54	690-34	..	5-08	20-85	2-16	44-27	..	54-67	25-69
50-50	136-40	653-31	..	12-85	8-40	0-10	46-73	1-10	71-66	18-93
43-44	182-52	538-63	..	14-60	11-20	7-46	37-45	..	20-03	8-05
42-97	177-46	544-66	..	23-74	19-10	0-51	34-48	1-18	10-11	25-41
53-38	225-88	644-87	..	13-48	14-33	13-68	49-07	1-12	18-78	8-81
50-22	122-64	560-04	..	..	..	4-03	43-40	..	22-86	23-52
63-34	264-88	757-93	..	4-04	12-27	19-32	59-79	..	74-43	43-07
28-88	78-92	306-77	..	20-78	..	4-08	16-42	..	20-54	33-32
16-18	33-76	204-86	..	4-84	..	..	8-19	..	40-09	61-71
<b>904-10</b>	<b>3,140-64</b>	<b>11,529-60</b>	<b>..</b>	<b>134-97</b>	<b>189-81</b>	<b>114-15</b>	<b>814-74</b>	<b>11-51</b>	<b>810-09</b>	<b>387-88</b>

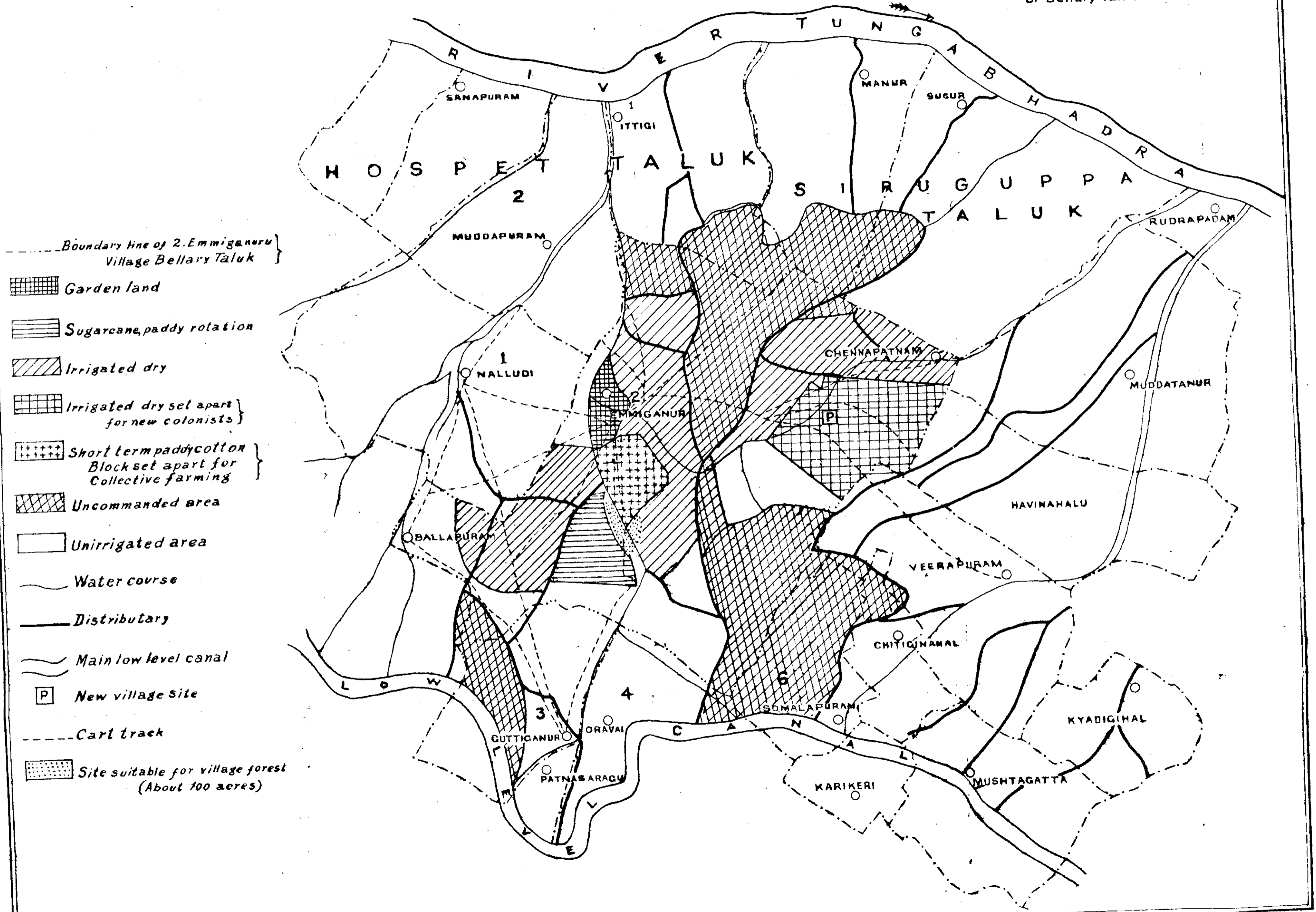
TRACT.



# MAP SHOWING THE EXPERIMENTAL LOCALISATION OF

Scale 1 inch = 1 Mile

- (1) Irrigable blocks
- (2) Blocks set apart for (1) New colonists and (2) for collective farming in Village No. 2, Emmiganuru Village of Bellary Taluk.







**TUNGABHADRA PROJECT**

**LOW LEVEL CANAL SCHEME**

**REPORT ON CROPPING  
SCHEME**

**BY**

**T. N. S. RAGHAVAN, I.C.S.**

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**1947**

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# LOW LEVEL CANAL SCHEME

## REPORT ON CROPPING SCHEME

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# TUNGABHADRA PROJECT

## LOW LEVEL CANAL SCHEME

### REPORT ON CROPPING SCHEME

In its Reference No. H. 665/45-8 (Confdl.), dated 21st December 1945, the Board has asked me to submit my proposals for crop rotation in advance of other proposals. The following report deals with my recommendations for the kinds of crops to be grown in the Tungabhadra Project area when water becomes available and the proportion of water to be utilized for irrigated dry, garden, wet and perennial crops, respectively.

2. Mr. Thirumalai Ayyangar's report proceeds on the assumption that 50,000 million cubic feet of water (including evaporation losses in the reservoir) can be utilized for new irrigation under the Low Level Canal Scheme and allowing for these evaporation losses, he proposes that 1,800 cusecs should be drawn off at the head of the main canal during the period 1st June to 31st January and 600 cusecs from 1st February to 31st May. Under the new agreement with the Hyderabad Government reached at the conference held on 24th, 25th and 26th June 1944, the Madras Government may draw off 65,000 million cubic feet (including evaporation losses) from the reservoir excluding contribution to the Kistna delta; but this 65,000 million cubic feet will have to provide also for existing irrigation under the Tungabhadra channels and any assistance to be given to the Kurnool-Cuddapah Canal. If the last two needs can be met by less than 15,000 million cubic feet, there will be a corresponding quantity over 50,000 million cubic feet which can be utilized for new irrigation under the Low Level Canal Scheme. In what follows, however, I am assuming that only 50,000 million cubic feet (including evaporation losses) can be utilized for new irrigation. If, in fact, a larger quantity becomes available, the extents proposed under different crops can be suitably increased. The Madras Government are not, however, tied down to abstraction from the reservoir at the rate of 1,800 cusecs from June to January and 600 cusecs from February to May as proposed by Mr. Thirumalai Ayyangar and my proposals involve a slight increase in the draw-off in the summer months with a corresponding decrease in the draw-off during the remaining months of the year. I have, however, kept the total draw-off for the year at Mr. Thirumalai Ayyangar's figure of 16,800 [(1,800×8)+(600×4)] cusec months.

3. The particulars of the ayacut proposed by Mr. Thirumalai Ayyangar are as follows:—

	ACS.
(1) Dry crop irrigation in the Mungari season ..	111,630
(2) Dry crop irrigation in the Hingari season ..	146,589

	ACS.
(3) Single crop wet in the Mungari season .. ..	15,000
(4) Perennial crop .. .. .	6,000
(5) Garden crop which will get supply in both the seasons .. .. .	15,000
(6) Summer crop to the west of the Hagari on an area not to be localized to begin with (duty allowed —90) .. .. .	36,000

[The 'Mungari' is the earlier cultivation season beginning in June-July and the crops benefit by both the south west and north east monsoons. 'Hingari' is the later season beginning in September or October after the lands have been thoroughly soaked by the rains in these months. 'Mungari' and 'Hingari' are commonly used to describe the seasons as well as the crops grown in them, but expressions like 'Mungari land', 'Hingari irrigation', etc., are also used in this report as a matter of convenience with obvious meanings.]

4. Apart from the fact that about 90 per cent of the ayacut will be land growing a dry crop, either in the mungari or in the hingari season, which raises difficult issues of the greatest importance, there are two main defects in Mr. Thirumalai Ayyangar's scheme. The first is that such paddy as is allowed is used as a balance against the large excess of the hingari over the mungari area so as to secure equality of the total water requirements during the mungari and hingari seasons. The result is that the irrigation for paddy can be given only during the mungari season, i.e., between June and September, a total period of four months. There are varieties of paddy that can be grown with irrigation in this season, but they are coarse varieties which will yield much less per acre than the usual long-term varieties common in the tract. Also, the harvest of paddy with no assured irrigation after September will have to take place in October, which is usually a month of heavy rainfall and it is common experience that paddy fares best when the ripening of the grain and harvest take place after the monsoon. Investigations at the Siruguppa Farm have shown that the best results in the tract are obtained with long-duration varieties like G.E.B. 24. It is also desirable that any scheme of irrigation for paddy should provide for growing a green manure crop and ploughing it in before paddy is grown and this is not possible when water is available only for four months. The second defect is that there are practically no crops which can be successfully grown with water supplied between February and May at a duty of 90 acres per cusec. Paddy can be grown in the season, but it requires more water. Certain vegetable crops for which 90 duty is sufficient end in April, but they require water from December. There are certain varieties of jonna and maize and some vegetables which can be started towards the end of April or the beginning of May, but these will require water in June and July. Attempts have been made in the Siruguppa Farm to grow green manure crops such as sunnhemp, cluster-beans, etc., between February and May and I understand that the yield was only 2,000 to 3,000 lb. of green matter per acre and such yields are hardly worth the trouble of irrigation even if the summer supply is given free. Green manure crops grown in May, June and July, on

On the other hand, easily yield 10,000 lb. per acre. The summer supply under the scheme will therefore be practically wasted. As the project is partly intended for the generation of hydro-electricity, at least a comparatively small quantity of water has to be drawn from the reservoir during the summer months in order to make some power available during these months and the most effective way in which this summer supply can be utilized is to increase the area under perennial crops and to provide for paddy in the second crop season.

5. (i) Irrigation of dry crops on a mass scale is a novel idea and the results of such precedents as are available are not very encouraging. Experiments in the Siruguppa Farm, however, show that "dry" crops can be successfully irrigated and with profit to the cultivator under certain conditions. The two main requirements are (a) care to see that only so much water as is beneficial to the crop is given and nothing more, and (b) adequate manuring. Each of these requirements creates a tremendous problem by itself.

(ii) The irrigation of the normal mungari or hingari crops such as cholam, korra, groundnut and cotton involves a supply of 2-3 inches of water once in 14 days. Where there is some rainfall just when an irrigation is due or several days after an irrigation has been given, there is no difficulty as the irrigation due is withheld or the irrigation is given some 14 days after the rainfall as the case may be; but if there should be a fairly heavy rainfall immediately after an irrigation has been given, the chances are that the crop will be spoilt or the yield will be reduced. The only way of tackling the difficulty is by making adequate drainage arrangements, which would effectively drain off surface water whenever a heavy rainfall immediately follows an irrigation. Even if such provision is made, some adverse effect on the crop cannot be avoided as the following extracts from the annual report for 1944-45 of the Siruguppa Agricultural Station will show:—

"In September again the rains were received in heavy down-pours causing some field washes, affecting the irrigated mungari crops which were almost ready for harvest and having some adverse effect on the grown-up mungari cotton and the young Cambodia cotton seedlings all raised under irrigation."

"On account of the continuous rains and consequent wet condition of the black soil, the young irrigated hingari crops, particularly Cambodia cotton and wheat, suffered a set-back in growth. The naked wheat crop was affected by 'damping off' and also was subjected to rust attack in the later stages of its growth."

"At the harvest time, the grains in the cholam ears became mouldy due to rains."

"Due to continuous wet conditions of the soils that pervaded the early stage of the wheat crop, Pusa 80-5 wheat, which was thought to be rust-free was subject to rust and later it succumbed to it."

When the rainfall is good and well-distributed, irrigation for the ordinary dry crops is largely superfluous and if the land is not well-manured, even injurious. I have seen this year in some fertile

fields in and near Siruguppa, standing crops of rain-fed cholam good as any grown in the Government Agricultural Farm. The system of irrigation to be followed for dry crops is also more difficult than for wet crops. The method followed should be such that every point of a field receives 2 or 3 inches of water and that no point of a field receives anything more. This is impossible in the case of large fields with only one or two cuts on the bunds by which water can enter. In practice, therefore, the field to be irrigated for dry crops, has to be laid out into comparatively small beds of not more than two cents each, so each, and irrigation has to be given to the beds one after another. Irrigation increases weed growth and weeding and intercultural operations in such small beds have to be done by manual labour as the use of cheap implements worked by animal power, as in the case of ordinary dry lands, would disturb the beds. All this means that the labour requirements would be very greatly increased as compared with pure dry cultivation, not to speak of the increased cost of ploughing, preparatory cultivation, harvesting, etc. It is owing to factors such as these that the one large-scale irrigation system under which there is extensive irrigation of dry crops, viz., the Kurnool-Cuddapah Canal has been a comparative failure. Want of capital and inadequate labour in the Kurnool-Cuddapah Canal area make it impossible for the ryots to undertake systematic irrigation in small beds. Irrigated dry crops are generally raised in large plots as in the case of ordinary dry lands and irrigation is resorted to only if the rains fail when there would be no harm in some parts of the field receiving very much more than 3 inches of water. As the irrigation is used merely as a substitute for rain and not to increase the total quantity of water which the crop receives during the cultivation season, the yields are not much better than those obtained on ordinary dry lands with good rainfall. Also in years of normal rainfall the canal water is not used for irrigation and is simply wasted. The extent irrigated from wells in the tract is so small that the ryots prefer to grow valuable crops such as onions, chillies, tobacco, vegetables, etc., and there is a widespread belief that the ordinary dry crops such as cholam, korra, groundnut and cotton do not require water at all except when the rains fail. It is therefore, a colossal scheme of irrigation of dry crops is to be successful in the area, not only have steps to be taken to meet the difficulties inherent in such irrigation but a faith in the efficacy and beneficial results of dry crop irrigation as a means of increased production has to be built up from its very foundations. The process must necessarily be slow.

(iii) As regards (b) the Siruguppa Farm experiments have clearly shown that the limiting factor in the success of dry crop irrigation is manure. The response to irrigation is small if the lands are not adequately manured and if a sufficient quantity of manure is not available as in the Kurnool-Cuddapah Canal area, irrigation can be nothing more than a substitute for rainfall when it is deficient. Any attempt to get more by mere irrigation will only deplete the soil. The main deficiency of the soils in the tract is in their nitrogen contents and normal manure requirements are 40 lb. of nitrogen per acre for



manure and 60-80 lb. per acre for Cambodia cotton. The want of manure is a serious defect in the project area. The manure requirements under purely dry conditions are negligible as compared with what is required when irrigated crops are grown, and even under the rain-fed conditions obtaining at present, only a few of the lands around the village-sites are manured for money crops such as chillies, tobacco and the ryots are content to trust to a long fallow for soil recuperation in the remaining fields. When irrigation is commenced, the number of cattle in the area will, no doubt, increase and artificial manures will become more common; but even so, it is doubtful whether all the three lakhs of acres proposed for irrigation in the project area will receive sufficient manure to make irrigated dry cultivation profitable. Any scheme of crop rotations should therefore provide for the growing of green manure crops on as large an extent as possible. Under Mr. Thirumalai Ayyangar's proposals, the only possibility is to utilize the summer supply for green manure crops and as I have pointed out already, February to May is not the most suitable season for such crops. If started in April or May, water will be required in June and July also and this will interfere with the supply of water for tungari crops.

6. Dry crop irrigation under a canal system is also difficult because it makes night irrigation unavoidable. Night irrigation is supposed to be actually practised under some major systems of irrigation; but as the irrigation is for wet crops, the ryot, in many cases, merely makes a small opening in the field bund to ensure a gentle flow of water through his field and goes to sleep comfortably. Where the irrigation is for dry crops, the ryots whose turn it is to take water during the nights will necessarily have to be on the fields to take it to see that any excess of irrigation, which will only spoil the crops, is avoided. The ryots will be called upon to do actual work on the fields at all hours during nights and there will be many ryots who will try to evade the inconvenience involved. Any water which is not actually used for irrigation will simply run to waste giving rise to problems of water-logging, erosion, etc., and there will be loud complaints of insufficiency of water for irrigation.

7. (i) The Tungabhadra Project was first conceived as a scheme for the irrigation of wet crops but has now evolved as a scheme for the irrigation chiefly of irrigated dry crops. The main reasons for the change are—

(a) that the soil of the tract was said to be unsuited for heavy irrigation such as that required for paddy,

(b) that the ryots in the area were said to be not used to wet cultivation but to prefer the growing of dry crops,

(c) that as a wet scheme the irrigable area would be very considerably reduced and that as the tract is liable to famine, it was preferable to spread irrigation over as large an area as possible, and

(d) that wet irrigation was likely to increase the incidence of malaria.

(ii) As regards (a), an extensive soil survey was conducted by the Government Agricultural Chemist in 1934-35 and the conclusion reached is "that the irrigation of the black soils is possible and there are no fears as regards the development of alkalinity or water-logging need be anticipated, provided that the irrigation be of a type controlled to suit the needs of the crops and that it is not allowed to be applied indiscriminately." The Agricultural Chemist goes further and says "the soil survey has shown that there are lands in plenty suitable for the application of irrigation in the sense of being suitable for wet cultivation provided the safeguards of drainage and a suitable system of irrigation were adopted" and suggests that crops like sugarcane, paddy, plantains and turmeric which will give large profits to the cultivator should be grown in the tract, at least as an experimental measure to begin with. The experiments conducted at the Siruguppa Farm in regard to the movements of salts over a series of years on irrigated soils have shown conclusively that there is no tendency at all for salts to move to the surface with irrigation, but that the salts are invariably washed down to lower regions and that the heavier the irrigation, the more pronounced is this effect. One of the methods recommended by the Punjab Irrigation Research Institute for the reclamation of alkaline soils is the cultivation of paddy and there is therefore no need for any apprehension of injurious results following heavy irrigation. If ocular demonstration were needed, we have the large extents of black soils under the Tungabhadra channels which have been continuously under heavy irrigation for centuries and which are still giving excellent crops of sugarcane and paddy. It has been found that the Tungabhadra water is of the highest quality and eminently suited for irrigation as the percentage of salts injurious to plant growth contained by it is negligible. As originally designed, the main canal was to cross the Hagari by a regulator and there was the risk of the irrigation water being contaminated by admixture with the water of the Hagari which contain a comparatively high percentage of sodium salts. This risk has been avoided as it is now proposed to cross the Hagari by an aqueduct. It may, therefore, safely be stated that there are no fears regarding the reaction of black soils to heavy irrigation need stand in the way of a higher percentage of wet and perennial crops being allowed, if such a course is considered desirable on other grounds.

(iii) As regards (b), whatever may have been the attitude of the ryots in the past, they are now very anxious to have irrigation for wet and perennial crops under the project. The Agricultural Chemist says at page 40 of his report on the soil survey, that during his enquiry it was found that the ryot population was keen on being given irrigation for growing crops such as sugarcane, rice, etc. I have found this remark fully borne out during the enquiries made by myself and my staff. In fact, most of the ryots do not believe that the irrigation of dry crops is worthwhile except for the purpose of saving a crop in years of deficient rainfall, and it requires considerable persuasion, with constant reference to the results obtained at the Siruguppa Farm, to convince them that the systematic irrigation of dry crops is going to be profitable after allowing for increased cultivation expenses. Even in

villages where the ryots are inclined to take kindly to the dry crop irrigation, requests have been made that at least small extents of paddy should be allowed, and in some of the bigger villages visited by me, it was painful to see the disappointment on the ryots when they were told that their villages would get no paddy. In a few villages, the ryots stated roundly that if irrigation is not for wet crops, they do not want the project at all with liability to pay a compulsory water-rate for the irrigation of dry crops. It may be that the high prices fetched by sugarcane and paddy during the war years are partly responsible for the anxiety of the ryots to have some irrigation for wet crops, but whatever the reason, I think that due note should be taken of the attitude of the ryots. The project is after all intended for their benefit and the chances of its proving a success are much greater if some allowance is made for their wishes instead of insisting on a system of dry crop irrigation which is bound to be a failure without the full and hearty co-operation of the ryot population.

(iv) As regards (c), it is no doubt true that the total quantity of water required for an acre of paddy with provision for a green manure crop is nearly three times that required for the irrigation of an acre of dry crops, but any reduction in the ayacut due to the provision of a larger extent under wet and perennial crops need not necessarily involve the complete exclusion of any villages which will now be benefited by the project. Even under Mr. Thirumalai Ayyangar's proposals, the irrigated area will be only about 60 per cent of the commanded area to the west of the Hagari and about 32 per cent to the east of it. Very large extents in each of the villages served by the project will therefore continue to be dry and a slight increase in the area left out of irrigation will make it possible to provide for a larger percentage of wet and perennial crops under the project. So far as the individual village is concerned, the matter can be worked somewhat as follows: If under Mr. Thirumalai Ayyangar's proposals the village is to have irrigation for dry crops, say, on an extent of 2,000 acres out of 5,000 acres, it is possible to exclude say, 600 acres out of the irrigable dry area and to substitute for it paddy on 200 acres with provision for green manure. The protective value to the village as a whole, of 200 acres of paddy and 1,400 acres of irrigable dry will be just as great as the protective value of 2,000 acres of irrigable dry only. The transmission losses are not in any way increased by the change, because, in any case, the same quantity of water has to be carried to the village. If anything, the substitution of 200 acres of paddy for 600 acres of irrigable dry will result in some saving of the transmission losses within the village and incidentally in the cost of digging field channels, etc. It is true that to the extent that irrigable dry is replaced by wet crops, the number of ryots benefited by the project is reduced, but it is possible to devise means to ensure that the benefits of such wet irrigation as is allowed is widely shared, e.g., by insisting, in respect of wet lands, on a larger proportion of surrender in lieu of betterment fee, by collective farming, by giving paddy irrigation to different ryots in different years, etc. (it will be seen that this point

is kept prominently in view throughout this report). The question, therefore, is whether from the point of view of general development of the project area, a larger percentage of wet and perennial crops should not be allowed. I shall deal with this question in the succeeding paragraphs.

(v) It must also be remembered in this connexion that the area commanded by the Low Level Canal Scheme consists mainly of the Siruguppa taluk, the western and northern portions of Adoni taluk and the western portion of Kurnool taluk and this area is not the most liable to famine in the Ceded districts. Hospet taluk in which a few villages will be irrigated is not liable to famine. The only taluks served by the canal in which famine conditions are frequent are Bellary, Alur and Pattikonda and the number of villages commanded by the Low Level Canal in these three taluks is comparatively small. I shall deal in a separate report with the question whether, in the interests of protection, a small high level canal to benefit a strip not commanded by the Low Level Canal should not be excavated simultaneously.

(vi) As regards (d), please see Appendix II.

8. The main result of designing the project as one intended almost solely for the irrigation of dry crops is that the success of the project will depend on the net money income which the ryot population can derive from a very narrow range of crops. Apart from groundnut and cotton which may be expected to give a fair money return to the ryots and which will figure prominently in the crop rotations in the mungari and hingari seasons respectively, the only dry crops suitable for cultivation under irrigated conditions on tens of thousands of acres are millets like cholam, korra, ragi, cumbu and maize. Under the scarcity conditions created by the war, these grains are now selling at prices not far below those prevailing for rice; but when normal conditions are restored, there is no doubt that the prices of millets will go down considerably and will bear the same relation to the price of rice as before the war. The pre-war prices were: rice, 7 to 8 local seers per rupee; cholam, 16 to 18 local seers per rupee; ragi, 18 local seers per rupee; and korra, 24 local seers per rupee. Millets have a very much more restricted market under normal conditions than crops such as rice, groundnut and cotton. The opinion of the ryot population is that irrigated cholam is inferior in quality to cholam grown under dry conditions and in any case, irrigated cholam does not keep so well and must be disposed of soon after the harvest. If the cultivation of millets is pushed much beyond what is required to meet the full food requirements of the local population and the population of a comparatively small area round it, the tendency will be for the prices to collapse and the money returned to the cultivators will be correspondingly reduced. Assuming that the difficulties of dry irrigation are surmounted and very much increased yields are obtained, the net income to the ryot, after meeting the increased cultivation expenses and paying the water-rate to Government, will, when normal conditions are restored, be comparatively small. Enabling the ryots to have a fuller

meal of cholam or korra will be a comparatively poor achievement for a costly project of the magnitude of the Tungabhadra Project. The more varied the crops grown in a tract, the healthier is its agricultural economy, as there is greater scope for adjustment and greater chances of adverse factors affecting some crops being offset by factors favourable to others. Improved agriculture, rural reconstruction and increased standard of living are the topics of the day and the Tungabhadra Project affords a first-class opportunity for varied development of a backward tract and for increasing its standard of living. The project can also go a long way to meet some of the major needs of the province. To give one instance, very large quantities of sugar are now imported into the province and sugarcane cultivation cannot be increased everywhere as many of the major irrigation works in the province do not provide perennial irrigation. The Tungabhadra Project will provide such irrigation and one obvious line of development is to increase the sugarcane cultivation under it.

Similarly the culture of fruit trees which perennial irrigation makes possible should be encouraged in the tract. The Central Land Utilization Sub-Committee appointed by the Government of India considered that to meet the nutritional requirements of the population, a 50 per cent increase of fruits is necessary in India as a whole; and the increase to be aimed at in this province must be higher. Orchards are best raised on red soils and the percentage of such soils in the project area is small. But there is enough to provide a few thousand acres for development as orchards. There is a five-acre garden under a well in Hunumapuram village near Emiganur (Adoni taluk) containing as many kinds of fruit trees as one would wish to see including mangoes, figs, sapota, pomegranates, limes, sweet limes, guavas, musumbi, papaya, etc. Fruit trees may also come up well in the alluvial strips adjoining the Tungabhadra. The province is not self-sufficient in rice and there is no reason why even after the construction of the project the cost of which will to a greater or less extent fall on the general tax-payer (in contra-distinction to the people benefited by the project), the tract should continue to make inroads into the available provincial resources in regard to the staple food of the people. It is, therefore, desirable that the cultivation of paddy (both superior and inferior varieties) should be allowed at least to the extent necessary to make the tract largely self-sufficient in regard to its rice requirements.

9. (i) The above observations are intended not as an argument for scrapping the " irrigated dry " scheme altogether but merely to stress the need for an appreciable increase in the irrigation for wet and perennial crops under it. Before formulating concrete proposals, it may be convenient to consider what exactly the substitution of a wet ayacut for a portion of the dry ayacut proposed by Mr. Thirumalai Ayyangar implies from the point of view of food production, and the resources needed to produce it. As already indicated one acre under paddy in the first crop season with provision for green manure involves the exclusion of nearly three acres of a mungari or hingari crop. The

best yields under rain-fed conditions are from yellow cholam grown as a mungari crop and the yields on the better class of soils in the Bellary district does not on the average exceed 300 lbs. per acre. Its response to irrigation is good and yields as high as 1,200 lbs. of grain per acre have been obtained in the Siruguppa Farm; but under ryots' conditions over a series of years, it will be too much to expect much more than twice the dry yield, i.e., 600 lbs. of grain per acre, or 1,800 lbs. of grain on three acres. A land of average fertility easily yields 1,500 lbs. of paddy per acre which is equivalent to 1,000 lbs. of rice. By irrigating only one acre for paddy and growing a dry crop of cholam on the remaining two acres, a ryot will obtain a yield of 1,000 lbs. of rice and 600 lbs. of cholam on the average as against a total yield of 1,800 lbs. of cholam if irrigated cholam is grown on all the three acres. There is not much difference in the total quantity of grain produced while the value of 1,000 lbs. of rice and 600 lbs. of cholam under normal conditions will be much more than that of 1,800 lbs. of cholam. The other important millet is korra. Its range of yields (both irrigated and unirrigated) is lower than for cholam and on the average irrigated korra on three acres will not, under ryots' conditions, give even the same quantity of grain as paddy on one acre and dry korra on two acres. Irrigation of cereals on hingari lands is not much of a success even in the Siruguppa Farm. If hingari irrigation is compared with the equivalent irrigation for paddy, the results in favour of paddy will be overwhelming; and it will be observed that my proposals involve a considerable reduction of the irrigated hingari ayacut only.

(ii) The difficulties involved in the irrigation of dry crops have already been referred to. Although the cultivation expenses for one acre of paddy will be more than for one acre of irrigated dry crop, they are much less than the expenses of growing irrigated dry crops on three acres. An irrigated tract will in any case produce more food-grains than are required for local consumption and the average ryot will measure the benefits of irrigation in terms of the net income he derives or the return on the outlay made by way of cultivation expenses. He would therefore normally prefer growing paddy on a limited extent to growing an "irrigated dry" cereal crop on three times that extent and this has invariably been the attitude of the ryots when I put the alternative to them during my tours. The manure requirements of paddy and irrigated cholam, korra, etc., are about the same; acre for acre, so that by confining irrigation to one acre of paddy instead of growing an irrigated dry crop on three times the extent, a ryot reduces his manure requirements by nearly two-thirds. Moreover, the practice of growing a green manure crop and ploughing it in before the cultivation of paddy is widely prevalent and this enables a ryot to make a considerable reduction in the quantities of other forms of manure which he applies to wet lands. To the extent that irrigated dry crops are replaced by paddy, therefore the manure problem in the project area will become easier to tackle.

(iii) A comparison such as the one made above serves no useful purpose for crops other than cereals. Prices, cultivation expenses and manure requirements of crops such as sugarcane, onions, chillies.

tomatoes, brinjals, cotton, tobacco and groundnut vary over a very wide range. Acre for acre, onions and vegetables possibly require more manure, involve more cultivation expenses and give more profits than even sugarcane. Groundnut is a leguminous crop which requires less manure than cereals such as cholam, cumbu and korra, but on black soils the net profits are not more. My proposals do not involve any large reduction in the mungari dry ayacut in which groundnut will be grown as a rotation crop. The hingari ayacut is reduced, but under the scheme suggested below, the area under irrigated cotton will not be less and may, in fact, be more than under Mr. Thirumalai Ayyangar's proposals. Crops like chillies, onions, vegetables cannot be grown on an extensive scale and such extents as can profitably be cultivated under the market conditions prevailing at any time will be cultivated whether the lands are registered as wet, garden or "irrigated dry."

10. I shall now consider the exact areas under the more valuable crops to be allowed in the project.

(a) *Sugarcane*.—In his note on "Post-war Development—Agro-Industries—Sugar", Mr. S. Y. Krishnaswami, I.C.S., has pointed out that the production of sugar in this province falls short of the total requirements by nearly 60,000 tons a year. Opportunities for increasing perennial supply of water in the areas already under irrigation in the province are limited and a considerable extension of sugarcane cultivation under the Tungabhadra project is desirable. This will also benefit the tract as sugarcane is a highly remunerative crop. Assuming a target of about one-fourth to one-third of the provincial deficit, provision for the production of 15,000 to 20,000 tons of sugar in the project area would not be excessive. The figures given in statement No. 3 of Mr. Krishnaswami's note show that roughly 10 tons of cane are required for the production of 1 ton of sugar. 1.5 to 2 lakhs tons of cane would therefore be required for the target aimed at. Statement No. 6 shows that over the presidency as a whole, only some 10 per cent to 13 per cent of the sugarcane grown is used for sugar production. Even if half the total quantity of cane grown becomes available for sugar-making in the project area, the total quantity of cane that may be grown will be twice the figure worked out above, i.e., 3 to 4 lakhs of tons a year. More production will be necessary if in practice only a smaller percentage is used for sugar-making. Provision for growing 3 to 4 lakhs tons of cane may therefore be safely made in the project area. Normally the yield of cane is about 20 tons per acre and 15 to 20 thousand acres will be required for 3 to 4 lakhs of tons of sugarcane. I propose that the project should provide for the irrigation of 15,000 acres of sugarcane every year. In this connexion I may point out that an extent of 2,700 acres of wet lands in the Hospet and Hadagalli taluks will be submerged by the Tungabhadra reservoir out of which sugarcane is raised on an extent of about 700–750 acres every year. The net increase in the extent under sugarcane in the tract will therefore be only 14,250 acres.

(b) *Paddy*.—Taking 15 per cent of the rural population and 60 per cent of the population of the municipalities to be rice-eaters, the Collector of Bellary has estimated the normal requirements of the Bellary

district at 3,000 tons of rice per month or 36,000 tons per year. Existing production is about 7,500 tons which gives a net deficit of 28,500 tons a year. The quotas of rice allotted by the Board to the Bellary district in 1944 and 1945 were 18,000 and 16,000 tons respectively but only 12,300 and 13,700 tons were imported in these two years. These quotas are however only what were considered to be the minimum requirements of the district in years of acute shortage and cannot be regarded as any indication of the normal requirements. The normal requirements may be taken to be something midway between the quantities allotted by the Board and the figure of 28,500 tons worked out by the Collector, say, 24,000 tons. Assuming a comparatively large yield of 1,500 lbs. or rice per acre,  $1\frac{1}{2}$  acres would be required to produce one ton, or 36,000 acres for 24,000 tons. Short-term varieties of paddy in the second-crop season yield much less than long-duration varieties and so a larger extent would be required if the 36,000 acres are not all in the first-crop season. Two thousand and seven hundred acres of wet lands out of which about 2,000 acres are under paddy every year will be submerged by the reservoir and there are the requirements of the portions of Kurnool served by the low level canal scheme and future increase of population to be taken into account. Anything less than 50,000 acres is therefore inadequate; but I propose to allow only 36,000 acres under paddy in the entire project area, making the fullest use of the summer supply of water so as to reduce the extent to be grown in the first-crop season which cuts into both the mungari and hingari seasons for dry crops. The area will be distributed as follows: (i) 15,000 acres to be grown as a rotation crop with sugarcane, (ii) 16,000 acres to be grown in the second-crop season—not as a second crop following a first-crop paddy but as the only irrigated crop in a fasli and (iii) 5,000 acres in the portion of the project area for which perennial supply cannot be made available.

(c) *Garden crops*.—Mr. Thirumalai Ayyangar proposes garden crops on an extent of 15,000 acres. The supply is intended to be made for 8 months from June to January. Experiments are made in the Siruguppa farm on the following alternative lines:—

(i) growing a short duration cereal such as korra, maize or ragi followed by a short-duration vegetable or money crop like tobacco, onions, brinjals or chillies;

(ii) growing a crop like maize and sowing Cambodia cotton when the maize comes to flower; the cotton crop comes up after the maize is harvested;

(iii) growing only one long-duration crop, e.g., chillies, started in the mungari season and remaining on ground over the greater part of the period for which the supply is available.

(iv) does not actually use water for eight months while (i) and (ii) are merely attempts to squeeze in two crops within a period which is really not long enough for the purpose. (i) gives rise to difficulties when the second crop is not of short duration, e.g., chillies started in the hingari season remain on ground beyond January when water-



supply will be cut off. In order to give complete latitude to the ryot to grow really valuable crops in the appropriate seasons without fear of the water-supply being cut off when a crop may need water, I propose that in the area served by the perennial reach of the canal, water for garden land should be made available throughout the year with a suitable increase in the water rate. This contributes to the beneficial use of the summer supply and gives a much wider choice of crops to the ryots; in particular, fruit-trees, betel and plantains, which require water throughout the year can be grown on the lands. In view of the fact that a considerable portion of the lands classified as garden will receive a perennial supply, I propose to reduce the total extent of garden lands in the project area to 12,000 acres distributed as follows: (i) 7,200 acres in the perennial reach and (ii) 4,800 acres in the area for which perennial supply cannot be made available. Garden lands are intended for the cultivation of the more valuable crops such as onions, chillies, vegetables, tobacco, fruit-trees, garlic, betel, turmeric, etc. They involve intensive cultivation and personal care and can therefore be grown only on lands close to the village. There is therefore no point in having too large an area classified as garden, and a comparatively high water rate is not justified if the ryot is expected to grow crops which can just as well be grown on the ordinary irrigated hingari or mungari lands.

11. Mr. Thirumalai Ayyangar proposes that the summer supply should be confined to the area to the west of the Hagari river, i.e., to the first 81 miles of the main canal (there is no irrigation at all up to the 14th mile). In view of the considerable increase in perennial irrigation proposed by me, it is essential that the summer supply should be made available in as long a reach of the main canal as possible. A perennial supply cannot be maintained over the entire length of the canal; for the quantity of water drawn from the reservoir in the summer months will be much smaller than in the period June-January and the percentage of transmission losses will be very high if a small volume of water is taken over long distances by a canal designed to carry a much larger volume of water. My proposals involve a draw-off of about 720 cusecs of water during the summer months as against 600 cusecs proposed by Mr. Thirumalai Ayyangar and this increase will itself make it possible to make a longer reach of the canal perennial. It is now proposed to take the canal across the Hagari by an aqueduct and this will avoid absorption losses in the Hagari sands during the summer months. It is for the Engineers to say how far (taking the above factors into account) the perennial reach can be extended without involving too high a proportion of transmission losses. But I would suggest that if it is at all possible, the supply up to the regulator in the 174th mile of the canal should be perennial. This will be a convenient point at which to stop as there is no irrigation for about 10 miles below. I am suggesting this point in particular as there is a fairly large red soil area to the west and north-west of the canal here and the more fertile lands should be suitable for development as orchards if a perennial

supply were available. The area is close to the main Madras-Bombay main line and marketing arrangements would be comparatively easy.

12. My proposals in regard to the actual extents of different crops to be irrigated under the project and the quantities of water required for each crop in different months are given in the statement in Appendix I. Some explanatory remarks are given below:—

*Item (a) in the Appendix.*—Though sugarcane requires water practically throughout the year, irrigation is normally given only once in 12–15 days. The quantity of water required per acre in any one month is therefore much less than that required for one acre of paddy. The Siruguppa results between 1940–41 and 1944–45 show a duty varying from 115 to 159 acres per cusec excluding rainfall, and a duty varying from 93 to 121 cusecs including rainfall. A lower duty means more water per acre and the provision I have made with a duty of 75 only in the summer months (February to May) and of 90 between June and December is very liberal. I have adopted the lower duty for January also, although it is a cold month, as lands are usually prepared for sugarcane in this month and a comparatively larger volume of water may be required.

*Item (b).*—The paddy will be a superior long-duration variety such as GEB. 24. The agricultural practices will be the same as prevail in the tract already. A green manure crop will usually be started in May and will be ploughed into the soil towards the end of July. The provision for this crop is at a duty of 150 in June and July and at a duty of 135 in May when more water may be required for starting the crop in summer on a hard soil. The transplantation will take place early in August and the paddy crop will not require any water after the end of November. The duty from August to November is 60 acres per cusec.

Items (a) and (b) will be combined into a total ayacut of 30,000 acres growing paddy and sugarcane in rotation in alternate years. This is the usual rotation under the Tungabhadra channels in the Bellary district. The ayacut will be divided into comparatively large blocks. Blocks aggregating 15,000 acres will be under sugarcane in one year and under paddy in the next, while the remaining blocks will be under paddy in the first year and under sugarcane in the second. Each block will have a separate irrigation channel to carry water to it and it will therefore be a simple matter to supply water at different duties as and when required. No water will be given after the harvest of sugarcane till the manure crop is started in May. This compulsory fallow for a few months is desirable when two valuable crops such as sugarcane and paddy are grown in rotation and soil fertility has yet to be built up.

*Item (c).*—The paddy in this item will generally be a coarse short-term variety, corresponding to the Dalwa varieties in the Godavaries, which are transplanted towards the end of January or the beginning of February and are harvested in the last week of April or the first week of May. No irrigation would be needed after the end of April. It may be possible to evolve a strain which could be trans-

planted in the middle of January and I have therefore allowed water at a duty of 60 from January to April. Though the paddy will be grown in the second crop season, it would be the only crop on the land for the fasli, except for a preceding green manure crop. The yields may therefore be expected to be better than when a first crop of paddy has been harvested. The selection of different lands for the long-term and short-term varieties ensures a wider distribution of the benefits of wet irrigation and avoids the possibility of soil exhaustion.

The green manure crop can be grown mainly with the aid of the rains between July and November. I have however allowed water at 135 duty (same as for hingari and mungari crops) in December for giving a good watering in that month to help the growth before it is ploughed in. Suitable green manure crops are indigo and pillipesara which are even now grown in the wet areas in Kurnool and Nandikotkur taluks. Both are long-standing crops and pillipesara has the advantage that one or more cuttings can be taken as fodder for cattle. It would be an advantage to give a wetting to start the green manure crop as otherwise the seed will have to be ploughed in with a "gorru." If water is available the seed is simply broadcast and the field watered. I have allowed a discharge of 80 cusecs (which works out to a duty of 200) during July for the wetting and this should considerably facilitate germination. July is a rainy month and only one comparatively light wetting is contemplated. The duty is therefore more than adequate.

The varieties of paddy suitable in one tract may not be suitable in others. There are however numerous varieties from which a selection can be made and experiments should be conducted at Siruguppa to evolve the best strain to suit the soil and climatic conditions of the project area. This should present no difficulty at all as a red variety is already grown as a second crop between January and April under the Kurnool-Cuddapah canal in Kurnool and Nandikotkur taluks. The aim should be to evolve a strain for which nurseries can be grown as soon as possible after 1st December.

*Item (d).*—Between June and January the duty is the same as that adopted by Mr. Thirumalai Ayyangar. As more water may be required during the summer months I have adopted the lower duty of 90 during these months.

*Item (f).*—The paddy will be a long-term variety as in (b). Provision for a green manure crop has been made at 150 duty during June and July. As we are dealing here with an area where the summer supply will not be available, the green manure crop will be started only in June and transplantation is therefore likely to be delayed till the middle of August. The paddy crop may, therefore, require water for about a fortnight during December also. I have, therefore, allowed in December a quantity of water, just a little more than half the quantity that would be consumed in each of the previous months.

*Items (e) and (g).*—Duties are the same as those adopted by Mr. Thirumalai Ayyangar.

*Item (j).*—As paddy lands will carry only a green manure crop during May, June and July, some water is available in those months after meeting the requirements of that crop. I propose that this water should be utilized for raising a green manure crop on irrigable hingari lands and ploughing it in at the end of July. Green manure crops are now grown on wet lands only but there is no reason why the practice should not be adopted with advantage on lands growing irrigated dry crops. Hingari lands will generally be of heavy black soil and irrigation is likely to be more beneficial if the texture is improved and the soil made more porous by ploughing in green manure in bulk at frequent intervals. The Agronomist in charge of the Siruguppa Farm agrees that it is desirable to encourage the practice. The provision made is sufficient for irrigating a green manure crop on about 20,000 acres. If the ryots prefer it, the supply may also be utilized for growing a fodder crop of cholam or maize. Korra, groundnut (bunch variety) and gingelly are other crops which it may be possible to grow during the period, but such crops should not be allowed in the earlier years of the project. Green manure and fodder crops should be encouraged instead and I propose to suggest that irrigation for these crops should be free of charge to begin with.

*Item (l).*—The preparatory cultivation of mungari lands should ordinarily be done during the rainy months immediately after the mungari crop has been harvested; but the first watering following the hot summer months may consume more water than what the ordinary duty (135 at the heads of channels and distributaries) allows for. Any such extra consumption may be met out of a surplus discharge of 80 cusecs available in June. In the alternative, the supply may be kept as a reserve for meeting any need for extra water that may be felt in August, September or October owing to the overlapping of the hingari and mungari seasons.

*Items (h) and (k).*—Please see succeeding paragraphs.

13. Almost all cereals can be profitably grown as irrigated mungari crops. Among the hingari crops, Cambodia cotton requires irrigation and gives much better yields than other varieties. Its lint is also of superior quality. White cholam, however, which is the most important food crop in the hingari season under dry conditions, does not respond to irrigation and even suffers by it. Ragi and korra do none too well during the hingari season, and fare better as mungari crops. Naked wheat is liable to various diseases. Groundnut is a failure as a hingari crop. Maize does well but is generally not popular in the project area. Glumed wheat gives good yields when given irrigation in the hingari season but this and crops such as chillies, onions and vegetables are not suitable for being grown on a mass scale on tens of thousands of acres. Cotton as an irrigated crop depletes soil fertility and with the limited manurial resources available in the project area, it is undesirable to grow it year after year on the same land. It is therefore difficult to suggest a rotation of crops for hingari lands under irrigated conditions. I have considered the possibility of cotton as a hingari crop and a cereal or groundnut

as a mungari crop in alternate years. Apart from the very unequal interval between successive crops which this involves, there is a practical difficulty. Cotton remains on ground till March, the black soil becomes hardened by the hot summer and the preparatory cultivation required for the following mungari crop becomes difficult. If the preparatory cultivation is made after water becomes available in June, a portion of the four months supply for mungari lands is lost. This difficulty in switching over from the hingari to the mungari season is a very serious one when it arises in respect of the entire hingari or mungari ayacut in the project area. The giving of water during summer months to facilitate the preparatory cultivation on such a large area is out of the question and water in the summer months will not be available at all beyond a certain reach of the canal. Hingari, mungari rotation is therefore not a solution to the problem. Further research may disclose a crop which can be grown in rotation with cotton on a mass scale in the hingari season, but until such a discovery is made, a scheme of irrigation has to be evolved with cotton as the only suitable irrigated crop which can be grown extensively in that season.

14. I propose first to reduce the magnitude of the problem by introducing hingari cotton as a rotation crop for lands which will be given irrigation for paddy in the second crop season and in the first crop season in the non-perennial reach [items (c) and (f) in Appendix I]. The rotations will be as follows:—

*A.—In areas where paddy is grown in the second crop season.*

- (1) First year—June to December—Green manure.
- (2) Second year—January to May—Paddy.
- (3) Second year—September to February or March of the third year—Cotton.
- (4) Third year—July to December—Green manure and so on in cycles of two years.

*B.—In the non-perennial reach.*

- (1) First year—May to July—Green manure.
- (2) First year—August to December—Paddy.
- (3) Second year—January to August—Fallow.\*
- (4) Second year—September to March of the third year—Cotton.
- (5) Third year—May to July—Green manure and so on in cycles of two years.

I have consulted the Agronomist in charge of the Siruguppa Farm on the suitability of the above rotations and he sees no objection to them. In fact he considers that better yields of cotton are likely to be obtained when it is grown in rotation with paddy as the lands are usually well-manured and will in any case have green manure ploughed in once in two years. Sugarcane is already grown in rotation with paddy and there is no reason why rotation with cotton should prove more difficult. Problems of seepage, flow of excess

\* A green manure or fodder crop between May and July is also possible out of the water in item (j) of Appendix I.

water, etc., will arise only if crops requiring widely different quantities of water are jumbled together in the same block; but such difficulties will be avoided if the rotation is worked by blocks with separate channels to carry water at different duties and in different seasons to different blocks. Certain research publications relating to the Punjab suggest that in that province paddy lands do not necessarily grow paddy every year and that paddy is, in many cases rotated with cotton and sometimes with other crops such as wheat barley, etc. The Cotton Specialist considers that paddy-cotton rotation is a good one and says that such a rotation exists in the Srivilliputtur taluk of Ramnad district. I, therefore, propose that 16,000 acres out of the area to be irrigated in the hingari season should be combined with item (c) of Appendix I so as to give a total ayacut of 32,000 acres under rotation A above and that another 5,000 acres of hingari irrigation should be combined with item (f) of Appendix I so as to give a total ayacut of 10,000 acres under rotation B. The ayacuts will again be divided into large blocks with separate irrigation channels, which will carry water at the appropriate duties in the seasons in which water is required. In the perennial reach whole blocks aggregating 16,000 acres will be under paddy in one year and under hingari cotton in the next; the remaining 16,000 acres will be under hingari cotton in the first year and under paddy in the second. Similarly, in regard to the rotation in the non-perennial reach, except that the total area of the blocks under the same crop in each year will be only 5,000 acres. The blocks can be easily adjusted so as to keep the total irrigation for the same crop under the same channel (or in the same reach in the case of large distributaries) constant from year to year.

15. (i) The above two rotations would account for 21,000 acres of hingari irrigation every year, and there remains another 65,000 acres which can be irrigated in the season. I suggest that instead of giving hingari irrigation to the same lands every year, two series of blocks, each series with a total extent of 65,000 acres, may be selected in the project area and that the two series may be irrigated in alternate years. Practically all the lands irrigated in any year will be cultivated with cotton (Cambodia) although ryots who have no garden lands may cultivate crops such as chillies, onions, and tobacco on small extents. In the year in which the lands will not receive water for systematic irrigation, white cholam or any other hingari crop may be grown as a purely rain-fed crop, which will, however, be given "protection" as explained below. As the extent under hingari crops in the project area is very much more than the extent under mungari crops, there will be no difficulty in selecting two sets of blocks with a total of 65,000 acres each suitable for irrigation. The ryot will pay the appropriate water-rate only in the year in which he is given water for systematic irrigation and need pay only the ordinary dry assessment in the other year. I once discussed with the late Chief Engineer for Irrigation, Mr. Govindaraja Ayyangar, a question of allowing each ryot to irrigate half the area to be included

in the "irrigated dry" ayacut and he was of the opinion that while the suggestion had certain advantages there was the possibility of the ryot taking water clandestinely to the area which he was not entitled to irrigate without paying for it. The criticism was perfectly justified in the form in which we discussed the question and there is also the further disadvantage that water would have to be spread over a wider area every year. The irrigation by blocks, each with a separate channel to serve it, which I have suggested above avoids both these objections. The water has in any case to be carried to the village, but once there it is distributed over a compact block every year; only the block irrigated in one year is different from that irrigated in the next. There is therefore no avoidable wastage; and there is no possibility of clandestine irrigation because the channels intended for the irrigation of blocks not entitled to irrigation in a particular year, will carry no water at all.

(ii) In neither of the series of blocks selected would all the lands be fit for irrigation immediately the project begins to function, so that irrigation in both the series would be possible in the earlier years. Irrigation in alternate years will come into full force only when the necessary reclamation has been completed in all the lands selected.

16. (i) With equal draw-off from the reservoir during each of the months June to January, some surplus water is available during the months of December and January after meeting the requirements of standing crops. In the years in which the north-east monsoon fails, December is usually the month in which the crops begin to wither and a wetting in this month would go a long way to save a withering crop. I propose that the surplus water available in December and January should be utilized to give "protective" irrigation to crops in the irrigable hingari blocks not entitled to systematic irrigation in the year in question. A wetting intended for such "protection" would normally consume more water than when one of a series of systematic irrigations is given. A duty of 135 provides for two normal irrigations in a month and assuming that the quantity of water consumed in a protective irrigation is twice as much as when a normal irrigation is given, the discharge of 170 cusecs available in December would be sufficient to protect an area of  $(170 \times 135) = 22,950$  acres, i.e., more than a third of the hingari irrigable area not irrigated in a year. The project area is spread over six taluks and it is not likely that adverse seasonal conditions would prevail simultaneously in all the six taluks. The areas in which adverse seasonal conditions actually prevail in any particular year are not likely to exceed a third of the project area and will not ordinarily include more than one-third of the lands now under consideration. The discharge of 170 cusecs available in December is therefore sufficient to give virtual immunity from loss of crops to the whole 65,000 acres of irrigable hingari lands which would not be receiving systematic irrigation in any year. The protective irrigation contemplated can be given anywhere in the ayacut area where the need for water is actually felt. A second irrigation to badly affected areas can be

given out of the surplus discharge of 34 cusecs in January. If in exceptional years of drought more than about 23,000 acres are in need of protective irrigation, a part of the January surplus can be utilized in December. If in any year irrigation to save a crop is required even before the 1st December in any reach of the canal the small extra supply that is actually required can be sent down and set off against the surplus available in December and January. Irrigation channels to take water to the blocks requiring it would exist on ground, as the blocks will be a part of the hingari ayacut. The protection afforded by item (k) in Appendix I is therefore a very real one. A nominal water-rate may be charged on the lands which are actually given protective irrigation. If the December and January surplus is not used in any year, it may, with benefit, be used to give an extra irrigation in February to late sown fields under cotton.

(ii) The scheme of irrigation in alternate years for hingari land has however one drawback. The owners of 130,000 acres will have to incur the initial expenditure involved in making the lands fit for irrigation although each land will normally be given water only once in two years. This, however, is not a very serious objection when viewed against the general advantages of the scheme. Also the Agronomist in charge of the Siruguppa Farm has evolved a system of irrigating fields under cotton by furrows formed by an agricultural implement after the cotton has been started as a rain-fed crop. This system would obviate the necessity of bringing the whole land to the same level or to lay it out into plots each on the same level. Where this system of irrigation is followed, a gentle slope will not matter, and will, in fact, help irrigation so long as the furrows are along the slope of the land. It is, therefore, possible that lands to be irrigated only for cotton could be made fit for irrigation at smaller cost than lands irrigated for other crops. There are, in the Ryots' Agricultural Farm at Bagawadi, such irrigated lands on which no appreciable initial expenditure has been incurred.

(iii) From the point of view of the ryot the scheme has the following advantages:—

(a) Every time he has to pay a water-rate to the Government, he will be growing a valuable money crop.

(b) The difficulties of labour, manure and increased cultivation expenses are avoided once in two years and avoided in respect of crops for which irrigation is least profitable.

(c) The yield of the crop grown without irrigation once in two years will ordinarily be better than on pure dry lands owing to the residual effects of the manure and water applied to the preceding irrigated crop.

(d) Even in the year in which he is not entitled to irrigate his land, water would be available if the season is bad and water is necessary to save his crop.

(e) He is asked to place less trust in the benefits of dry crop irrigation.

(f) There is much less risk of soil exhaustion.



(iv) Even without the provision for protection (which I have evolved only recently), ryots consulted by me in a few villages were inclined to prefer irrigation in alternate years mainly for the reason that a larger area would be benefited. Over a series of years the profits from irrigable hingari lands are not likely to be much less than from an equal extent of mungari lands irrigated every year. Even if they are, all it amounts to is that the unearned increments derived from the project in the two cases are different. Such differences are unavoidable (e.g., irrigation for sugarcane and irrigation for mungari dry crops) and can be taken into account in working out a scale of "betterment" contribution (either in money or in the shape of land) if the levy of such a contribution is made. I may say here that in respect of the lands now under consideration, I propose to recommend a smaller proportion of surrender in lieu of payment of betterment fee than in respect of the lands which are given systematic irrigation every year. This, in the eyes of the ryot given hingari irrigation, will be an additional advantage and there are facilities for growing, without charge, green manure crops under irrigation on hingari lands [item (j) in Appendix I]—facilities which cannot conveniently be made available to the owners of the irrigated mungari lands. On the whole, therefore, I am not sure that on the terms proposed, the ryot given hingari irrigation will not be treated more liberally than the ryot given mungari irrigation every year. Irrigation in alternate years could be converted into regular irrigation every year when more of the Tungabhadra waters become available for utilization. By that time agricultural research will no doubt have disclosed a crop or crops which could be confidently recommended for rotation with cotton on vast areas and there would be some solid experience to go on in regard to systematic light irrigation of black soils for cereals.

17. The ayacut I propose for the project now sanctioned (partial utilization scheme) is as follows :—

	ACS.
(1) Lands under rotation—	
(a) Sugarcane—paddy (long duration) .. .. .	30,000
(b) Short-duration paddy—Cotton .. .. .	32,000
(c) Long-duration Paddy—Cotton .. .. .	10,000
(2) Garden lands with perennial supply of water .. .. .	7,200
(3) Garden lands with 8 months supply of water .. .. .	4,800
(4) Irrigated dry—	
Mungari .. .. .	86,000
Hingari—	
(a) Actually irrigated .. .. .	65,000
(b) Protected .. .. .	65,000
Total {	
Including 4 (b) .. .. .	300,000
Excluding 4 (b) .. .. .	235,000

Note.—Green manure or fodder crops may be grown on some 18–20 thousand acres out of the lands in items 4 (a) and (b) above.

I give in Appendix III a statement comparing the ayacut with that proposed by Mr. Thirumalai Ayyangar, showing under the same lettering items which may be set off against one another, so as to show at a glance the net gain and loss under either scheme.

My proposals involve a reduction in the regularly irrigated dry area by about 86,000 acres of which about 60,600 acres are hingari. The average ryot knows his business and when he is given water for irrigating a land only in alternate years, he will take care to grow the more remunerative crops in that year. This means that the irrigation lost is in respect of crops for which it is least beneficial or least remunerative. Taking into account the inadequacy of the resources required to derive full benefit from irrigated cultivation in the tract and the poor response to irrigation of cereals grown in the hingari season, the protection for the dry crop which I have provided is probably worth nearly as much as any increased income the ryots may be able to derive in the earlier years of the project if it were possible to irrigate the 60,000 and odd acres referred to above every year. Viewed in this light, the cropping scheme I have proposed makes it possible to grow an extra 9,000 acres of sugarcane and 21,000 acres of paddy with a comparatively insignificant reduction in the benefits of dry irrigation. There is also the wider selection of crops given to owners of garden lands. Water is used not to fight nature, but to assist the process of nature. It is taken away from where the irrigation is least remunerative and given for crops which cannot be cultivated at all without it. In the language of the Economist, "the marginal utility" of irrigation is increased and this considering the magnitude of the project, is a very great gain to the people of the tract and indirectly to the country.

In this connexion I may say that the Hyderabad Government propose that about one-fourth of the area irrigated by the project should be under paddy and the 36,000 acres of paddy I have proposed is modest in comparison.

18. I may now briefly summarise the advantages of the cropping scheme I have recommended:—

(i) It will provide for a varied development of the project and a healthier agricultural economy with larger extents under the more valuable crops. The additional income to the ryots as a result of the project will be considerably increased making for a higher standard of living. There is more scope for starting agro-industries in the area. Owing to the appreciable increase in the proportion of irrigation for paddy the increase in food production, even on a purely quantitative basis, will not be less than under Mr. Thirumalai Ayyangar's proposals.

(ii) Considering the high cost of the project, it is important to ensure that all the available waters are actually used. My proposals make effective use of the summer supply and the crops are such that either water is essential for their cultivation or the ryots are more likely to actually take water for cultivation, than under a 90 per cent hingari-mungari scheme.

(iii) To the extent that the actual user of water is ensured, the easier will it be for the ryots to pay water cess and the less the likelihood of opposition to a scheme of compulsory levy of water cess on the area localized as irrigable.

(iv) The total employment provided by the scheme over the whole year will certainly not be less than that provided under Mr. Thirumalai Ayyangar's proposals, while the maximum area that will be under irrigation at any one time is reduced from 1.68 lakhs of acres (147,000 hingari + 15,000 garden + 6,000 perennial) to 1.33 lakhs of acres. Taking the project area as a whole, a smaller labour force would therefore be sufficient. This is a great advantage in an area so thinly populated as the project area and the magnitude of the problem of increasing the population to the extent necessary to secure efficient cultivation under project conditions is reduced. At the same time the considerable extents under sugarcane, paddy and perennial garden which will be under cultivation during the summer months would keep a fairly large portion of the available labour employed during those months also. The problem of providing subsidiary occupations for agricultural labour would to this extent be easier to deal with.

(v) The success of irrigation depends on the availability and application of adequate quantities of manure to the soil. The area to be actually irrigated each year will be reduced from 2.94 lakhs of acres under Mr. Thirumalai Ayyangar's proposals to 2.34 lakhs of acres and the manure requirements will, on the whole be proportionately smaller (paddy does not require more nitrogen than an equal extent under irrigated cereals and the only crop which requires proportionately a larger amount of manure as compared with irrigated cereals is sugarcane). Manure requirements can be partly met by growing green manure crops in situ and incorporating them in the soil and the increase in the area under paddy will largely ensure that this practice is actually adopted, at least on lands in respect of which paddy figures in the rotation. I have made special provision for the systematic growing of manure crops on the 30,000 acres under paddy-sugarcane rotation and 40,000 acres under paddy-cotton rotation. I have also provided a sufficient volume of water to enable ryots to plough in a green manure crop once in a period of about 6 years on all lands which would be irrigated only in the hingari season. This should be of considerable help as only three irrigated crops would be raised on the lands during the period.

(vi) Paddy in the two seasons (in the perennial reach) and the green manure crops thereon form a unit which consumes more or less the same quantity of water throughout the year so that it would not matter if agricultural operations such as transplantation and harvest in different fields have to be spread out over a period of about a fortnight owing to inadequacy of labour, etc. There is no such flexibility in Mr. Thirumalai Ayyangar's proposals as no water would be available at all before June and no water can be taken after September without seriously affecting the very large hingari ayacut proposed

by him. It is to secure this flexibility that in the non-perennial reach, I have provided water in December also.

(vii) The considerable increase of irrigation for paddy will reduce the inconvenience and the risk of wastage of water involved in night irrigation, provided that wet irrigation is spread more or less evenly over the project area; for the ryots can arrange to use the flow in the irrigation channels round about midnight for the irrigation of paddy and to do such night irrigation for dry crops as is unavoidable, during the hours following night-fall and those preceding daybreak.

(viii) Last but not least, the scheme partly meets the wishes of the people of the tract to have a large increase in the area under wet crops.

19. A cropping scheme should primarily be in the interests of the tract affected and the precise irrigation revenue to be derived therefrom is of secondary importance. But in a big irrigation scheme the question of revenue is one which is very important in itself. Appendix IV shows that the revenue from the scheme in Appendix I is not likely to be less than under Mr. Thirumalai Ayyangar's proposals.

20. I have consulted the Superintending Engineer, Tungabhadra Project Circle, on a scheme which, though not identical with that in Appendix I, is in essentials the same and based on the same principles. I have also discussed with him orally the variations between that scheme and Appendix I and he agrees with me that no difficulties from the engineering point of view are likely to arise as a result of the cropping scheme I have proposed. The only change of some engineering importance is that involved in making the summer supply available over a longer reach of the main canal. Mr. Thirumalai Ayyangar perhaps suggested the Hagari as a convenient natural limit for perennial supply. Now that the river will be crossed by an aqueduct the supply can be easily made available up to any other regulator below it. Mr. Thirumalai Ayyangar has worked out transmission losses at 100 cusecs for a discharge of 500 cusecs at heads of sluices and distributaries, i.e., a proportion of 1:5. The discharge required for irrigation during the summer months according to my proposals is 543 cusecs, and as part of the water has to be carried over a longer reach, the transmission losses will bear a higher ratio to the discharge required at heads of sluices and distributaries. I have therefore allowed 173 cusecs towards transmission losses which is slightly less than a proportion of 1:3. The total discharge to be drawn from the reservoir during the summer months February to May will then be 720 cusecs. As regards the remaining months, Mr. Thirumalai Ayyangar has worked out transmission losses at 499 cusecs for irrigation requirements of 1,301 cusecs at heads of sluices and distributaries. Owing to the increase in the draw off from the reservoir in the summer months February to May, the draw off in the remaining months will be slightly reduced. I have nevertheless retained Mr. Thirumalai Ayyangar's figure for transmission losses and rounded it to the higher figure of 500 cusecs reducing the total discharge at heads of sluices and distributaries to 1,240 cusecs (as against 1,301

uses under Mr. Thirumalai Ayyangar's proposals). The higher proportion of transmission losses would make it possible for some irrigation to be shifted from the higher to the lower reaches of the main canal, and this is what, I propose, should be done as will appear from paragraph 22.

21. In Mr. Thirumalai Ayyangar's proposals there is a tendency to restrict irrigation for the more valuable crops to the areas served by the higher reaches of the canal. All the perennial irrigation under his scheme is under distributaries taking off between miles 13 and 20 of the main canal. There is no paddy at all below the 116th mile of the canal (total length of the canal including the Kurnool branch is 140 miles). In a project of this magnitude, it is important that all the available resources of men, money, manure and cattle should be utilized to secure as quick a development as possible, and this is particularly so in a backward tract covering portions of the Bellary and Kurnool districts where these resources are very limited. It is therefore essential that the more intensive types of irrigation should be distributed widely over the project area so that every part will make some contribution to the success of the project. If all the intensive irrigation is restricted to a small area, it will take decades or perhaps centuries for the anticipated development to be actually reached. In localizing the ayacut for the different crops care should therefore be taken to see that wet and garden irrigation is well distributed over the project area though sugarcane and perennial garden have necessarily to be restricted to the areas for which supply will be available during the summer months also. This wide distribution can be brought about without involving any appreciable change in the discharges at different points of the main canal and in the carrying capacity of the distributaries. For my proposals involve a considerable reduction in the area under dry crops that will be actually irrigated in any year. This reduction will be distributed throughout the project area and each village or group of villages can be given garden wet and perennial irrigation roughly corresponding to the reduction in the dry crop irrigation in the village or villages.

22. I also recommend the shifting of some irrigation from the area to the west of the Hagari to the area east of it, so as to secure a more uniform intensity of irrigation on the two sides. This would be possible to some extent from the larger percentage of transmission losses referred to at the end of paragraph 20. Mr. Thirumalai Ayyangar has proposed that the intensity of irrigation (i.e., the proportion of irrigated area to the cultivable area) on the western side of the Hagari should be roughly twice the intensity on the eastern side of it. The irrigable area on the western side consists mainly of parts of

the Siruguppa and Bellary taluks which have the smallest density of population in the tract (vide figures in the margin) and Siruguppa taluk is highly malarial. Whatever extraneous assistance may be given it is idle to expect

<sup>1</sup>Population per square mile according to census of 1941.

Siruguppa taluk	..	172
Bellary taluk (excluding Bellary munic. pality).		148

Adoni taluk (excluding Adoni Municipality) . . . 217  
 Kurnool taluk (excluding Kurnool Municipality) . . . 206

that anything like 61 per cent of the area in this region would be brought under intensive cultivation in a short time. To the extent that the intensity of irrigation is reduced in this area, with a corresponding increase of intensity to the east of the Hagari, development would be easier and quicker. The Superintending Engineer, Tungabhadra Project Circle, has suggested that any revised ayacut proposals should not involve "violent" changes in the general design and cross-section of the main canal at different reaches as work relating to acquisition and construction has been commenced. The shifting of the irrigation I have suggested can however be brought about by a very simple device without involving any material change in the design of the main canal. Paragraph 33 of Mr. Thirumalai Ayyangar's report shows that during the mungari season, the consumption and transmission losses up to the Hagari work out to 660 cusecs and that a total discharge of 1,140 cusecs is passed on to the area east of the river. The canals and distributaries on the east are therefore apparently designed to carry and dispose of this discharge of 1,140 cusecs. If during the hingari season also a discharge approximating to this figure is passed on to the east of the river instead of 937 cusecs only as proposed, the quantity to be consumed to the west of the Hagari, will be something not much above 660 cusecs (including transmission losses) as against 863 cusecs under Mr. Thirumalai Ayyangar's proposals. With this reduction of consumption in the hingari season in the area to the west of the river, a very large reduction in the total extent to be brought under irrigation in this area can be effected, and the large difference between the mungari and hingari ayacuts (63,180 minus 22,200 or about 41,000 acres)—which has its complications from the point of view of labour—will be avoided. The extent irrigated in the hingari and mungari seasons will be approximately equal to one another on both sides of the river and this is in keeping with the cropping scheme in Appendix I under which the total hingari and mungari irrigations are equal. No material alterations in the sections of the main canal are therefore necessary. On the other hand the main channels and distributaries on the western side of the Hagari need not carry a specially large volume of water during the hingari seasons and it is possible that with approximately equal hingari and mungari ayacuts on this side, many of the channels and distributaries could be reduced in size with some saving in the cost of the project.

23. As regards hydro-electric power, I have preserved the principle of equal draw off from the reservoir during each of the months June to January and equal draw off of a smaller quantity during each of the remaining months February to May. The total power generated in the year will remain the same but as the draw-off in the summer months will be 720 cusecs as against 600 cusecs proposed by Mr. Thirumalai Ayyangar, the power developed during these months will be increased roughly in the proportion of 5:6, with a corresponding reduction in the quantity produced in the

remaining months of the year; that is to say, the minimum power available throughout the year will be larger and the difference between the minimum and maximum power produced will be smaller. This will be more convenient (or rather less inconvenient) from the consumer's point of view and the cost of any thermal or other schemes which the Government may have in view for bridging or reducing the gap between the maximum and minimum hydro-electric power generated by the project will be reduced. Any unevenness in the generation of power caused by the abstraction of water intended for protection as and when required, will be so small that it will make no practical difference to the utilization of power.

24. Final decisions in regard to the alignment of different channels and distributaries and the extents under different crops to be irrigated in different reaches of the main canal will have to be reached before actual localization of the irrigable extent can be taken up. This work will have to be done jointly by responsible officers of the Revenue, Agricultural, Public Works and possibly also of Public Health departments, under proper supervision. Blocks for irrigation should be selected so as to secure the maximum efficiency of irrigation and the maximum increase of production. Due weight must be given to the facility with which the lands can be irrigated from the channels as designed and other things being equal, the more fertile blocks will be selected for irrigation, the suitability of the soil for the kind of irrigation proposed being also borne in mind. As a measure of malaria control, wet irrigation will not be allowed within half a mile or six furlongs of village-sites. Mr. Thirumalai Ayyangar has proposed that paddy should be restricted to low-lying areas. I doubt whether this restriction is really necessary or desirable. Low-lying areas near vankas, etc., are in many cases of shallow soils and the experiments at the Siruguppa Farm have shown that the yields of all kinds of crops on shallow soils are poor. Effective drainage is as important for paddy as for other crops. If only low-lying areas are selected, the blocks are likely to be in long narrow belts and the heavy irrigation of such areas involves a considerable wastage of water as water goes straight into a drainage course after passing through one or two fields. In the case of paddy there is no objection to water flowing from one field to another and such a practice obtains in the deltaic tracts. Though this process cannot be carried on indefinitely, irrigation for paddy is likely to be more economical if the fields are in well formed square or rectangular blocks. Also the risk of erosion is greater on the margins of water courses. All that is necessary to ensure is that the drainage water from heavily irrigated areas does not make the cultivation of other lands—pure dry or irrigated dry—impossible. Subject to this condition, I would suggest that heavy irrigation may be allowed in such areas as are considered most suitable for them which have adequate drainage facilities. This modification is all the more necessary as under my scheme, there is no land which is under paddy in every year and where the sugarcane-paddy rotation is not followed, paddy will be grown in rotation with cotton.

Low-lying areas of poor soil which are likely to receive seepage and drainage water from lands above, are the most suitable for the location of village forests.

25. The extents given in Appendix I under different crops need not be regarded as final. Actual figures will depend on the adequacy or otherwise of the transmission losses I have provided for, the total quantity of water available for new irrigation, the precise point up to which perennial supply will be made available, etc. I recommend that the general scope of the project may be modified on the lines indicated in the preceding paragraphs.

I am sending copies of this report to the Chief Engineer for Irrigation, the Director of Agriculture, the Secretary to the Government, Public Works Department, and the Superintending Engineer, Tungabhadra Project Circle.

T. N. S. RAGHAVAN,

*Special Officer, Tungabhadra Project, Bellary.*



**APPENDIX I.**

**DISCHARGE REQUIRED IN CUSECS.**

	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	
(a) Sugarcane on 15,000 acres—Duty 90/7 months and 75 5 months.	167	167	167	167	167	167	167	200	200	200	200	200	
(b) Paddy on 15,000 acres grown in rotation with (a) with provision for green manure.	100	100	250	250	250	250	..	..	..	..	..	118	
(c) Paddy on 16,000 acres in the second crop season with provision for green manure.	..	80	..	..	..	..	119	267	267	267	267	..	
(d) Perennial garden on 7,200 acres (duty 120/8 and 90/4).	60	60	60	60	60	60	60	60	80	80	80	80	
(e) Eight months garden in the non-perennial reach 4,800 acres—Duty 120.	40	40	40	40	40	40	40	40	..	..	..	..	
(f) Paddy on 5,000 acres in the non-perennial reach with provision for green manure.	34	34	84	84	84	84	45	..	..	..	..	..	
(g) Mungari on 86,000 acres (duty 135) .. .. .	639	639	639	639	..	..	..	..	..	..	..	..	
(h) Hingari on 86,000 acres (duty 125) made up of (i) 16,000 acres in rotation with (c), (ii) 5,000 acres in rotation with (f) and (iii) two blocks each aggregating 65,000 acres and receiving irrigation in alternate years.	..	..	..	..	639	639	639	639	..	..	..	..	
(j) Green manure crops on hingari lands .. .. .	120	120	..	..	..	..	..	..	..	..	..	154	
(k) Supply available for protection to 65,000 acres of hingari lands not receiving systematic irrigation.	..	..	..	..	..	..	170	34	..	..	..	..	
(l) Supply available for meeting any need for extra water that may be felt in starting cultivation on mungari lands.	80	..	..	..	..	..	..	..	..	..	..	..	
<b>Total required at heads of channels and distributaries ..</b>							<b>1,240</b>						<b>547</b>
<b>Transmission losses ..</b>							<b>500</b>						<b>173</b>
<b>Total draw off from the reservoir ..</b>							<b>1,740</b>						<b>720</b>

Total draw off from the reservoir = (1,740 × 8) + (720 × 4) = (13,920 + 2,880) = 16,800 cusec months which is equal to the total annual draw off under Mr. Thirumalal Ayyangar's proposals, i.e., (1,800 × 8) + (600 × 4) = 16,800 cusec months.

## APPENDIX II.

## MALARIA IN RELATION TO WET CROPS.

*Malaria* is endemic in the project area. The breeding places of the malarial mosquito are legion. Taking into consideration the physical features of the tract and the untidy habits of the agricultural population, there is no doubt that with the advent of the project, the number of breeding places will be very largely increased even if only dry irrigation is allowed and as a home of malaria-control on an extensive scale will have to be introduced. Some risk of increase in the incidence of malaria as a result of the project is unavoidable and the question in relation to wet crops is merely one of the precise degree of risk.

No malarial larvae are found in sugarcane fields. Though I am proposing 36,000 acres of paddy in the project area, not more than 20,000 acres, or about 2 per cent of the area of the tract affected, will be under paddy at any one time and this extent will be scattered here and there in the project area. Any increased risk of malaria can be largely avoided by taking care to see that no paddy is allowed within half a mile or six furlongs of village sites. Even this restriction is considered unnecessary from the point of view of malaria-control in the Nizam Sagar area in Hyderabad. Such a restriction was first imposed by the Hyderabad Government, but was subsequently removed as research work in the area showed that paddy fields are not the favourite breeding places of vector species. For the present, however, we may proceed on the assumption that the restriction is necessary. It is not the paddy that is dangerous but the wet fallow conditions which precede the cultivation of paddy. Larvae disappear when the paddy plant has established itself. The chief vector species which breeds in paddy fields is *A. Culicifacies* and malaria-control work in the Pattukottai area of the Tanjore district has shown that green manure crops grown before paddy and ploughed into the lands create conditions "inhibitive to *A. Culicifacies* breeding" and that this will probably provide a "unique naturalistic method of control". It will be noticed that the cropping scheme proposed provides in every case for a green manure crop before paddy. Further research before the project actually comes into operation, may disclose other methods of controlling malaria.

As (i) malaria-control in the project area will in any case be necessary and (ii) any increased risk due to paddy can largely be avoided by the safeguards referred to, it is undesirable to lose the benefits which a larger area under paddy will confer on the tract.

APPENDIX III.

CROPPING SCHEMES—COMPARISON.

<i>Scheme in Appendix I.</i>					ACS.	<i>Mr. Thirumalai Ayyangar's proposals.</i>					ACS.
(a)	Sugarcane	..	..	..	6,000	6,000	(a)	Perennial.	..	..	..
(b)	Sugarcane	..	..	..	9,000	..	(b)	....	..	..	..
(c)	Long-duration paddy	..	..	..	20,000	..	(c)	....	..	..	..
(d)	Short-duration paddy	..	..	..	15,000	}*	15,000	(d)	Short-duration paddy.	..	..
(e)	Short-duration paddy	..	..	..	1,000		..	(e)	....	..	..
(f)	Perennial garden (a)	..	..	..	7,200	† {	10,200	(f)	Eight months garden.	..	..
(g)	Eight months garden	..	..	..	4,800		4,800	(g)	Eight months garden.	..	..
(h)	Mungari dry	..	..	..	86,000	§ {	86,000	(h)	Mungari dry.	..	..
(j)	....	..	..	..	..		25,630	(j)	Mungari dry.	..	..
(k)	Hingari cotton	..	..	..	73,290	} †	73,290	(k)	Are likely to be under cotton at half the total hingari ayacut.	..	..
(l)	Hingari under cotton and other crops	..	..	..	12,710		12,710	(l)	Hingari under crops other than cotton.	..	..
(m)	....	..	..	..	..	{	60,589	(m)	Hingari crops other than cotton.	..	..
(n)	Protection for irrigable hingari area	..	..	..	65,000		..	(n)	....	..	..
<b>Total</b>		including (n)		..	300,000			294,219	<b>Total ayacut.</b>		
		excluding (n)		..	235,000						

(a) **NOTE.**—One acre perennial garden is treated as equivalent to something less than 1½ acres of 8 months garden.

• Total, 16,000 acres.

† Total, Hingari 86,000 acres.

‡ Total, 15,000 acres.

§ Total, Mungari 111,630 acres.

|| Total Hingari 146,589 acres.

## APPENDIX IV.

Note.—The water-rates given below are merely illustrative for purposes of comparison and should not for the present be treated as definite proposals.

## IRRIGATION REVENUE—COMPARISON.

*Cropping Scheme in Appendix I.*

						Revenue.
						RS.
						LAKHS.
Paddy, long duration	..	20,000	acres at	Rs. 10	an acre.	(a) 2.00
Sugarcane	..	15,000	..	15	..	(b) 2.25
Paddy, short duration	..	16,000	..	6	..	(c) 0.96
Perennial garden	..	7,200	..	12½	..	(d) 0.90
Eight months garden	..	4,800	..	9	..	(e) 0.432
Mungari dry	..	86,000	..	4	..	(e) 3.44
Hingari dry	..	86,000	..	4	..	(e) 3.44
Protective irrigation on, say	..	20,000	..	1	..	(f) 0.20
<b>Total</b>						<b>13.622</b>

*Mr. Tirumalai Ayyangar's proposals.*

						LAKHS.
						RS.
Perennial	..	6,000	acres at	Rs. 15	an acre.	0.90
Paddy, short duration, in the mungari season on 15,000 acres at Rs. 6 an acre.						0.90
Eight months garden on 15,000 acres at Rs. 9 an acre	..					1.35
Hingari and mungari dry	258,200	acres at	Rs. 4	an acre	..	10.328
<b>Total</b>						<b>13.478</b>

Remarks.—(a) This is superior paddy of long duration which will give much better yields than the coarse short-duration varieties which can alone be grown under Mr. Tirumalai Ayyangar's proposals. Also water is provided for a preceding green manure crop. A water-rate of Rs. 10 is therefore justified if Rs. 6 is adopted for the inferior varieties.

(b) The rate adopted is one and a half times the rate for a single crop paddy of long duration. The same rate has been allowed for Mr. Tirumalai Ayyangar's "perennial" in the comparison.

(c) Same as the rate for paddy proposed by Mr. Tirumalai Ayyangar as both are coarse varieties.

(d) Water will be given for 12 months and the rate adopted is a rupee less than 1½ times the rate proposed by Mr. Tirumalai Ayyangar for eight months irrigation.

(e) Mr. Tirumalai Ayyangar's rates.

(f) A very moderate rate is assumed.

Mr. Tirumalai Ayyangar takes credit for a revenue of Rs. 1.44 lakhs from a summer crop on 36,000 acres; but as I have pointed out in the report, it is very difficult to suggest a suitable crop which will use water between February and May and even if a suitable crop is found, it is difficult to grow it on lands which carry a mungari crop every year or a hingari crop every year. In the one case the "summer crop" irrigated till May will not be harvested till some time in June and this will interfere with the cultivation of some time in June and this

will interfere with the cultivation of the succeeding munguri crop; in the other, the preceding hingiri crop, though not eligible for irrigation after January will usually remain on ground during February and sometimes (e.g., cotton) till the middle of March. In practice, therefore, only a green manure crop is possible. Such a crop does not come up well in the season and Mr. Tirumalai Ayyangar himself says that if the summer supply is used for a green manure crop, no charge should be made for some years after the project comes into operation. The credit taken for the revenue from a summer crop is therefore largely illusory; but if it is taken into account for what it is worth, the comparison will not be valid unless corresponding credit is allowed on the other side for some revenue from the irrigation of green manure crops which I have provided for on paddy lands [items (b) and (f) in Appendix I], and for the irrigation in item (j) of the appendix. The water in item (j) will be sufficient for a crop of fodder cholam, mize, butte groundnut, korra or gingilly on about 18,000 acres (duty 150 in June and July and only 117 in May) and at Rs. 4 per acre is capable of yielding a revenue of 0.72 lakhs and with a modest Re. 1 an acre for the irrigation provided in items (b) and (f) of Appendix I for green manure crops, the possible revenue will be—

	RS.
	LAKHS.
Green manure crops on 31,000 acres at Re. 1 an acre .. ..	0.31
Fodder cholam, mize, korra, etc., in May, June and July, 18,000 acres at Rs. 4 per acre .. .. .	0.72
Total ..	1.03

The comparison will then be—

	RS.
	LAKHS.
Revenue from the cropping scheme in Appendix I (13.622+1.03).	14.652
Revenue under Mr. Tirumalai Ayyangar's proposals (13.478+1.44)	14.918

The difference is negligible and this comparison is largely academic for Mr. Thirumalai Ayyangar's figure of Rs. 1.44 lakhs is not likely to be realized nor do I intend to propose any charge on the items in Appendix I referred to above.





**TUNGABHADRA PROJECT**

**LOW LEVEL CANAL SCHEME**

**REPORT ON THE  
LEVY OF COMPULSORY WATER RATES—  
RATES FOR DIFFERENT CROPS—  
CONCESSIONS IN THE  
EARLIER YEARS**

**BY**

**T. N. S. RAGHAVAN, I.C.S.**

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# TUNGABHADRA PROJECT

## LOW LEVEL CANAL SCHEME

### REPORT ON THE LEVY OF COMPULSORY WATER RATES—RATES FOR DIFFERENT CROPS—CONCESSIONS IN THE EARLIER YEARS

The question whether, when water is given for the irrigation of dry crops, the ryots should be required to pay a water-cess every year, whether or not they actually use water in any year, has been under discussion for a long time in connexion with the Tungabhadra Project. The consensus of opinion is that, without a compulsory levy, the project is not feasible at all. The present practice in the Presidency is that a consolidated wet assessment is paid whenever a land is registered as wet and that when it is registered as dry, water-cess is levied only in years in which water is actually used even if the crop grown is usually a wet crop such as paddy. The idea that a compulsory water-cess should be levied when the whole ayacut under the Tungabhadra Project will continue to be registered as dry appears, at first sight, to be a revolutionary one, and it was only after a good deal of consideration and discussion, that the Bhavani Reservoir Irrigation Cess Act, 1933, which contemplates a compulsory levy of cess for the irrigation of dry crops, was passed. The settlement practice of working in an element of compulsory water-cess in the assessment for wet lands by taking a standard grain like paddy which cannot be grown without irrigation and of adopting a standard grain grown without any irrigation at all for dry lands is, however, largely an accident resulting from the circumstance that only wet crops are irrigated on any extensive scale in the Presidency. If, however, a crop like, say, irrigated cotton should be grown on large extents in any tract, there is no logical reason why a commutation rate for that crop should not be worked out and a corresponding assessment fixed for lands on which it is grown. Such an assessment may just as well be split up into a dry assessment and a compulsory water-cess. The essential question in connexion with a compulsory water-cess is, therefore, not what the crop grown is or how exactly the land is registered in the revenue accounts, but whether an assured supply of water is given or not. If it is conceded that certain crops which are ordinarily grown without irrigation do give better results when irrigated, and if, as a matter of policy, the project is designed mainly to give an assured supply of water for the irrigation of such dry crops as will benefit thereby, there seems to be no reason why a compulsory water-cess representing a portion of the increased yield due to irrigation, should not be levied, in addition to the dry assessment, on lands which are expected to take water systematically. The point at issue then

will be, not how a land is registered in the revenue accounts, but whether, in fact, irrigation gives an increased yield and whether the lands on which increased yields will be obtained, have been clearly defined.

2. I have already pointed out that the Tungabhadra Project is not worth execution at all if it achieves nothing more than the protection of a "dry" crop on the whole or a portion of some three lakhs of acres in years of deficient rainfall; and to enquire whether a ryot can afford to pay a compulsory water-cess when he will take water only once in three years or so, is to pursue a vicious circle. In my view, saving a dry crop is only a negative form of protection and the avoidance of a further lowering of a miserable standard of existence is not, and should not be, an end in itself. Real protection consists in enabling the ryot population to increase their normal production and their normal surplus to such an extent, that they will be able to snap their fingers at any loss that may be incurred on certain lands in bad years. It is not always that such an increase of production is possible. The greater is, therefore, the need that such opportunities as present themselves, should be availed of to the fullest possible extent and to look upon a big and expensive project like the Tungabhadra Project as something which would save a poor crop in bad years is to miss a golden opportunity. Every form of help which the population may need to bring about an increased production should, of course, be freely given and I have indicated already the lines on which such help might be given. But the Government, that is the tax-payers in general, have a right to expect that the whole purpose is not defeated by an attitude of easy-going indifference on the part of the local population; in other words, the holders of lands under the project should, if necessary, be compelled to use every drop of the project water to the fullest advantage so as to benefit themselves and the community.

3. What the results of a policy of *laissez faire* in the matter of development of irrigation are likely to be, can be clearly seen under the Kurnool-Cuddapah Canal. The mere availability of water is no guarantee that it will be used and where the resources of men, money, manure and cattle, required to derive the full benefits of irrigation are not forthcoming, the chances are that water will not ordinarily be used. Seventy-five years have elapsed after the Kurnool-Cuddapah Canal was excavated and the ryots under the canal are still taking water for dry crops only when the rains fail. In the remaining years the water mostly runs to waste and the cultivation is no more intensive than in many other 'pure dry' lands. Every ryot knows that the transplantation of paddy gives better results than broadcasting the seed, but only a small percentage of the paddy lands under the canal are transplanted, the reason given being invariably want of labour. The results under the Tungabhadra Project will also be the same and it may take centuries for the anticipated development to be reached unless (1) it is made perfectly clear to the ryots that they are expected to get a much better outturn on their lands every year

and (2) arrangements are made to give effective help to the ryots in getting the better outturn. I have dealt with (2) in previous reports, but extraneous help will be of no avail unless the ryots are prepared to help themselves. The population of the tract as a whole cannot be expected to realize this and most ryots will be inclined to leave the initiative to others. If the project is to prove a success, therefore, the responsibility for development should be clearly fixed. It is to fix this responsibility that I have suggested that the ayacuts should be localized before irrigation commences. (There are of course other reasons as well.) The Siruguppa experiments have shown that with irrigation and a more intensive system of cultivation than that practised at present, larger yields and larger profits will be obtained in certain crops and there is no special hardship in requiring the owners of the lands given water for irrigation to grow such crops and to pay a moderate water-cess every year. Care must, of course, be taken to see that larger yields will, in fact, be obtained with the means available to the ordinary ryot and that is where a proper cropping scheme is of paramount importance. Under Mr. Thirumalai Ayyangar's proposals, for instance, which assume that about 1.5 lakhs of acres will be irrigated for dry crops in the hingari season, every year, when most cereals do not give an increased return in the season, a scheme of compulsory levy of water-cess may give rise to some difficulty. Under my scheme, hingari lands will be irrigated in alternate years and in those years the ryots can grow money-crops which undoubtedly receive considerable benefit from irrigation. Wet crops like paddy and sugarcane and many garden crops cannot be grown without irrigation at all; and for the mangari season, the ryots will have a fairly wide range of crops which give larger yields under irrigation. When irrigation is provided at great cost and the crops to be grown are such as can be irrigated with benefit even when rainfall is more or less normal, the Government are justified in insisting that the ryots should use water and make a genuine attempt to get better yields on all irrigable lands. The most effective way in which the actual user of water can be ensured is to levy a compulsory water-cess on the lands for which it will be made available and I accordingly recommend that an appropriate water-cess should be levied every year in respect of all lands included in the ayacuts under the Tungabhadra Project, whether or not water is actually used, except that in the case of hingari irrigable lands, the water-cess should be levied only in the years in which the blocks concerned will be given water for systematic irrigation. The compulsory levy will be subject to certain concessions in the earlier years of irrigation as indicated in paragraph 11.

4. So far I have not specifically considered the question of return from the project. Taking into account the power, revenue, etc., the rates proposed below will give an ultimate return of about 2.1 per cent on Rs. 10 crores, the present estimated cost of the project. Assuming a low market rate of interest of 3 per cent, something like Rs. 9 lakhs a year will, therefore, have to be borne by the general

tax-paying public. This may be a legitimate expenditure for the rehabilitation of a backward tract but in fairness to the general tax-payer, it must be ensured that this figure will not be very much exceeded, i.e., that the anticipated revenue of Rs. 21 lakhs will, in fact, be realized from the persons benefited by the project within a reasonable time. I have no doubt that without a compulsory water-cess, the estimated revenue will not be realized at least for the next 100 years.

5. In paragraph 29 of its report, the Famine Code Revision Committee, 1938, has recommended the levy of a compulsory water-cess on the irrigable lands under the Tungabhadra Project. Many of its members were non-officials and it made a point of sounding non-official opinion. The committee has stated that there was a general willingness to accept a compulsory levy. My staff and I have consulted the ryots in all the villages in the project area on the proposal, and they are all prepared to accept a compulsory levy of water-cess on lands localized as irrigable. Some villagers of course stated that they would prefer an optional scheme, but did not press the matter when the difficulties of an optional system were explained to them.

6. The liability to pay a compulsory water-cess whether water is taken or not, should form part of the special legislation for the Tungabhadra Project. There is no need for a system of permits on the lines of the Bhavani Reservoir Irrigation Cess Act, 1933, because the mere inclusion of a land in the ayacut will carry with it the liability to pay a cess along with the liability to surrender a portion of the holding, dealt with in my reference No. 52 of 1946, dated 2nd February 1946. Unless a ryot accepts both the liabilities, the irrigable lands in his holding will be acquired as "dry" as recommended already. It will, of course, be open to the ryots to make representations when the ayacuts are localized so as to exclude particular blocks or particular lands from irrigation; but when once the ayacuts are fixed, it will not be open to any ryot to refuse to take water for any land classified as irrigable.

7. (i) I shall now proceed to discuss the water-rates for different crops. My cropping scheme involves, in some cases, the cultivation of different kinds of irrigated crops on the same land in different years, e.g., lands under sugarcane-paddy and cotton-paddy rotations. In such cases, I propose that the water-cess, appropriate to the crop grown, should be levied in the fasli in which the crop is harvested.

(ii) *Long-duration paddy*.—This is not the same as the short-duration paddy to be grown in the mungari season for which Mr. Thirumalai Ayyangar proposes a water-rate of Rs. 6 an acre. The long-duration varieties contemplated will be similar to the varieties now grown under the Tungabhadra channels and water will be given without any extra charge for a preceding green manure crop. I, therefore, consider that a water-rate which, together with the dry assessment, would correspond to the average wet rates under the Tungabhadra channels would be more suitable. The existing wet rates in the Bellary district vary from a maximum of Rs. 13 an acre

to a minimum of Rs. 4-12-0 an acre on some of the poorer lands. I enclose a statement, Appendix I, showing what may be called the weighted average water-cess, worked out from the existing wet and dry rates in three big villages irrigated by the Tungabhadra channels, allowance being made for the actual extents under different tarams in each village. The weighted averages are Rs. 10-9-0, Rs. 10-3-0 and Rs. 10-5-0 in the three villages. I propose a water-rate of Rs. 10 an acre for the long-duration paddy under the Tungabhadra Project. It is unnecessary to go into the question of cultivation expenses and profits, as the rate is lower than that derived from the existing wet rates under the Tungabhadra channels in the tract. The rate was voluntarily suggested by the ryots in many villages and in some the ryots were so anxious to get irrigation for paddy that they were prepared to pay a water-rate of Rs. 12 or more an acre.

(iii) *Sugarcane*.—I propose a water-rate of Rs. 15 an acre which is one and a half times the rate for long-duration paddy. This together with the dry assessment will be somewhat less than one and a half times the weighted wet rate now paid by the ryots under the Tungabhadra channels, but I think that the small difference may be ignored as it will take some time for soil fertility to be built up and for the yields to be as high as under the existing channels.

(iv) *Short duration paddy*.—This will be grown as a summer crop under my scheme and will be the only crop for the fasli except for a preceding green manure crop. Only coarse varieties are possible and the yields will generally be much less than those of long-duration varieties. Effective utilization of the summer supply is as much a reason for putting in this crop as the need for increasing the total area under paddy. It is intended that the preceding green manure crop should depend mainly on rainfall although water will be given for the initial sowing and for an irrigation in December before it is ploughed in. I think the rates proposed by Mr. Thirumalai Ayyangar for his mungari paddy is appropriate and I accordingly propose Rs. 6 an acre for the short-duration paddy under the project.

8. Before considering rates for garden and irrigated dry crops it is necessary to have some idea of the range of increased income from such crops, as compared with purely dry crops. This is difficult to estimate, because there is very little of such irrigation in the project area. I think it would be wrong to rely too much on the Siruguppa results because the conditions there are in no way representative of ryots' conditions. The fields have been receiving large quantities of manure for several years and the experiments are conducted by an experienced agronomist who has all the resources of Government at his disposal. We cannot assume that the average ryot will be able to incur cultivation expenses on the same scale as in the Siruguppa Farm or that sufficient quantities of manure will be available at reasonable prices to make it possible for the same dose to be applied per acre. There is also the fundamental difference in outlook between a Government servant experimenting with funds placed at his disposal by the Government and an average ryot risking borrowed money which has, in any case, to be repaid with interest. It will be several

decades after the advent of the project before anything like the yields in the Siruguppa Farm are obtained under average ryots' condition in the project area and the quantitative results at the farm are therefore of no use as a guide to the rates of water-cess. I have, therefore had economics of irrigated cultivation studied in a few villages where such irrigation is going on under wells, tanks, etc., in and near the project area. The big Public Works department tank at Duroji, one of the villages selected, did not receive any supply at all this year while the rainfall in Bannur and Jatur villages selected under the Kurnool-Cuddapah Canal in the Nandikotkur taluk, was so good that most of the ryots did not take any water for the irrigation of dry crops. The irrigation in Moka is under a Haguri spring channel and the supply is so precarious and the maintenance of the spring channel is difficult that the ryots use water very sparingly for irrigation of dry crops. In the other villages selected, namely, Genikihal, Kosig Balagal and Thorngal, irrigation is by lift from wells. The results such as they are, are tabulated in appendices II (a) to (n), separately for each crop like onions, chillies, java, "neeru-jola", etc. In addition, I have incorporated in the statement, wherever possible, results obtained at the Ryots' Agricultural Farm at Bagawadi, where a free supply of Tungabhadra water is being given for some lands during the last two years. An abstract for all the crops is given in Appendix II. Before any conclusions are drawn from the figures, the following points must be borne in mind:—

(i) The increased income is not solely due to the supply of water but is the composite result of extra manure, extra money, extra labour and water, so that only a part of the increased income can be treated as due to the supply of water.

(ii) The cultivation expenses are those which are incurred when only comparatively small extents in each village are irrigated and the ryots are able to concentrate whatever manure is available on the irrigated lands; considerable effort will be necessary if similar results are to be obtained throughout the area irrigated by the project.

(iii) If a dry crop worth Rs. 15 an acre is obtained from an expenditure of Rs. 5 and an irrigated crop worth Rs. 60 is obtained by incurring an expenditure of Rs. 30 it does not follow that an irrigated crop is three times as profitable as a dry crop. A ryot may just as well argue that if he had spent Rs. 30 on pure dry lands, he would have got a total yield of Rs. 90. In other words, the mere fact that the ryot is called upon to spend a much larger amount by way of cultivation expenses on an irrigated land entitles him to expect a much larger return therefrom and an allowance has to be made for this factor over and above what is implied in (i) above.

(iv) Both the prices of agricultural produce and the scale of cultivation expenses are abnormal at present.

I have tried to allow for (iv) by working out the net profit or loss on the pre-war basis also, i.e., assuming that the prices of the crops, the cost of seed manure, etc., and the wages of labourers are the same as before the war, and where expenditure is now incurred in baling, figures to show what the profit or loss will be if no such

expenditure has to be incurred are also given in the statements. On the whole, it is clear that the statements will not provide any arithmetical guide for arriving at reasonable water rates; but as I have proposed water rates for wet crops independently in the previous paragraph, they would be useful for the purpose of suggesting rates for garden and dry crops which would be fair and reasonable in comparison.

9. *Garden crops given water for eight months.*—(i) I have proposed only 4,800 acres in the non-perennial reach for such garden crops. The period of water-supply is not long enough for two valuable crops to be grown. In some cases, one short duration millet like cholam or korra may be grown in addition to a crop like chillies, but in such cases the later crops will probably have to do without irrigation for a short time after January. We may therefore assume that at least one highly remunerative crop like onions or chillies can be grown with the irrigation provided. It will be seen from the figures in Appendix II (a)—paddy, II (b)—onions and II (c)—chillies that onions ordinarily give much higher profits than paddy; and chillies give profits which are just about the same as paddy. Crops like ragi and glumed wheat [Appendix II (d) and (e)] will give smaller profits, but only small extents of land classified as garden will be cultivated with such crops in years in which the ryots take two crops. Onions and other vegetables however require a very intensive type of cultivation and the high profits are really the results of the extra labour and care bestowed on the land and the large outlay made by way of cultivation expenses. Though water will be given for a period of eight months for the lands under consideration, the quantity consumed in any month will be only about half the consumption of paddy. On the whole I consider that a water rate somewhat less than that for long duration paddy would be suitable and this also happens to fit in with the rate proposed by Mr. Thirunalai Ayyangar. I accordingly recommend a water rate of Rs. 9 per acre for lands given water for eight months for garden crops. It will be open to the ryots to raise one or two crops as they choose.

(ii) *Gardens given water throughout the year in the perennial reach.*—I have proposed 7,200 acres for perennial gardens. It should be possible to grow two valuable crops every year with a green manure crop in between. A rate which is just a little less than one and a half times the rate proposed for eight months garden would, I think, be fair and reasonable and I accordingly recommend a water rate of Rs. 12-8-0 an acre for perennial garden (which is Re. 1 less than one and a half times the rate for eight months garden). This will be a consolidated charge for the whole fasli and it would be immaterial how many crops are raised in the fasli. The rate is somewhat less than that for sugarcane and this is fair because the quantity of water consumed will be much less than for sugarcane in each month.

I contemplate that wherever the soil is suitable, the perennial garden lands should be developed as orchards and a rate of Rs. 12-8-0 an acre is not excessive for land planted up with fruit trees. There

will be no income from fruit trees for a few years after planting; but it will be seen from my proposals below that the full water rate on all the irrigable lands will not be levied till some seven or eight years after the commencement of irrigation and it would be possible to grow catch crops on lands on which fruit trees are raised. For the present therefore I do not propose any special concessions for orchards until they begin to yield and the question may, if necessary, be considered later with reference to the actual conditions prevailing after the advent of irrigation.

(iii) *Mungari dry irrigation*.—The main crops to be grown on these lands will be cholam, korra, ragi and groundnut ordinarily mixed with pulses; these crops are rarely irrigated at present and there is very little ragi in the tract. Appendices II (f) and (g) would show that if the charges now incurred on baling are excluded, irrigated cholam under ryots' conditions would, on the average, give about twice the net profits of cholam grown as a purely dry crop. Irrigated korra gives about three to four times the net profit of dry korra with present prices [Appendices II (h) and (j)] but as korra was a very cheap grain before the war, the difference on a pre-war basis is not so high. In terms of money, the profits from korra, whether irrigated or dry, are much lower than those of cholam. Ragi, if it should become popular, would be a fairly remunerative crop for the mungari lands under irrigation. According to Appendices II (k) and (l) there is very little difference between irrigated groundnut and dry groundnut in the matter of profits; but the groundnut shown as irrigated in Appendix II (k) is all in Jutur village under the Kurnool-Cuddapah canal in the Nandikotkur taluk which received just one or two irrigations. It is probable that with systematic irrigation under the Tungabhadra project, groundnut would give much larger yields than as a dry crop. So far as irrigation for dry crops is concerned, the ryots were at first inclined to suggest that the water-rate should be just about equal to the existing dry assessment on the footing that the yields would be doubled by irrigation. But I explained to them that different rates for different fields were not contemplated, that as far as possible good lands which would derive the largest benefit from irrigation alone would be included in the ayacuts, and that a water rate should bear some relation to the extra profits resulting from irrigation on the average. I also informed the ryots that Government would give every assistance possible to enable the ryots to get larger yields from their lands. In a majority of villages the ryots finally stated that they would be prepared to pay a water rate of Rs. 5 an acre if necessary but considered that anything more than Rs. 4 would be excessive. In some other villages, the corresponding figures were Rs. 4 and Rs. 3 per acre. There were a few villages in which the ryots agreed to pay Rs. 5 and were prepared to go up to Rs. 6 an acre if necessary. It is obvious that a compulsory water rate which will be levied every year even if the ryot does not take water, must be moderate and I think that anything more than Rs. 4 an acre suggested by Mr. Thirumalai Ayyangar is out of the question, as a rate of compulsory levy. This is of course very low with the present



level of prices, but it is probable that the prices of dry grains would be substantially lower when irrigation under the project commences. I accordingly recommend a water rate of Rs. 4 an acre for lands which will be given irrigation for dry crops in the mungari season.

(iv) *Hingari dry irrigation.*—Under my proposals lands on which paddy is allowed would grow irrigated hingari crops in alternate years. The bulk of the hingari ayacut however will receive water for systematic irrigation only once in two years and will get water only for saving a dry crop in the years in which systematic irrigation is not given. When systematic irrigation is allowed, the ryots will ordinarily raise Cambodia cotton though small extents may be cultivated with other money crops such as tobacco, chillies, etc. There is very little irrigated Cambodia cotton in the project area and the figures given in Appendix II (m) are in respect of a few acres under this crop in the Ryots' Agricultural Farm at Bagawadi. The fields did not receive a sufficient quantity of manure but even so the profits are Rs. 43-6-6 per acre as against Rs. 29-12-6 from local varieties of cotton grown on dry lands in the farm. (The results at Daroji shown in Appendix II (n) may be ignored as considerable expenditure was incurred on the lands which the ryots intended to irrigate from the tank, but the crop had to be grown as a pure dry crop as the tank did not receive any supply this year.) On the whole, considering the crops which will be raised in the years in which systematic irrigation will be given for hingari lands, I think that in such years the ryots will get much larger profits than from mungari lands. There will usually be no rainfall after the end of November and the lands given hingari irrigation will, therefore, actually use water more often than irrigated mungari lands. There is also the opportunity given to owners of irrigable hingari lands to grow green manure and fodder crops without charge once in a few years. I, therefore, recommend a water-rate of Rs. 5 an acre for lands given systematically dry crop irrigation in the hingari season. Mr. Thirumalai Ayyangar proposes the same rate for mungari and hingari irrigation but under his proposals, profitable irrigation in the hingari season would have been on the average more difficult than in the mungari season, whereas under my proposals, systematic irrigation in the hingari season will be distinctly more profitable. It may be noticed that a higher water-rate for hingari irrigation was proposed by Mr. Parameswaram Pillai in 1933 (paragraph 126 of his report on page 50 of G.O. No. 1429 L., dated 6th July 1934), although he did not contemplate irrigation in alternate years. The water-rate of Rs. 5 proposed by me is to be paid only in the years in which systematic irrigation will be given. In the other years, a ryot will pay only the ordinary dry assessment with a nominal water charge, if in any year he takes water to save a dry crop.

(v) *Charge for protective irrigation.*—In paragraph 16 of my report C. No. 16 of 1946, dated 21st January 1946, I have suggested that the water required for giving a protective irrigation to dry lands might be about twice that required when one of a series of systematic

irrigation is given, i.e., a protective irrigation would consume as much water as the normal mungari or hingari irrigation for one month. Considering that for the systematic irrigation of hingari lands the water-rate proposed is slightly more than that for mungari lands, I think that the charge for a protective irrigation should be low, and I accordingly recommend a rate of Re. 1 per acre when protective irrigation is given. The charge will be levied only on the lands which are actually given such irrigation in any year.

(vi) *Green manure and fodder crops.*—My cropping scheme provides some water for growing green manure and fodder crops on irrigable hingari lands in the months of May, June and July. It is necessary that the practice of ploughing in green manure crops grown *in situ* should be encouraged on hingari lands which will generally be of heavy black soil. The crops grown under irrigation in the hingari season on these lands will not give stalks for fodder. I, therefore, propose that no charge should be made for the irrigation of green manure or fodder crops grown with the supplies provided in May, June and July for a period of 15 years from the commencement of irrigation under the project.

Some ryots may use the systematic supply given in the regular hingari or mungari season for raising green manure and fodder crops. In view of the importance of green manuring to meet the difficulties of finding adequate quantities of manure under project conditions, I recommend that green manure crops grown in the normal mungari or hingari season on lands given systematic dry crop irrigation in those seasons, should also be free of charge, i.e., the water-rates normally leviable should be remitted when a green manure crop is grown. This concession may also be in force for a period of 15 years from the advent of irrigation. I do not think that a concession on the same scale is necessary in respect of fodder crops grown in the mungari or hingari seasons, as the position in regard to fodder under project conditions will, on the whole, be quite satisfactory. I recommend the remission of one-half of the normal water-rates when a fodder crop is grown in the mungari or hingari season—again for 15 years from the commencement of irrigation.

(vii) *Crops other than green manure or fodder crops grown with the supply in May, June and July.*—Such crops should be discouraged in the earlier years of the project. Though the supply is only for three months, some ryots may grow crops like cholam, bunch-groundnut, korra, etc., trusting to the rains after July to bring the crop to maturity. It may be difficult to work a rule totally prohibiting such crops and I recommend that if any such crops are grown, they should be charged a water-rate of Rs. 5 an acre. This will have a deterrent effect and water will in any case be cut off after the end of July.

10. The prices of agricultural produce are an important factor in the determination of water-rates. I have suggested very moderate rates above partly to allow for the possibility of some fall of prices and partly to encourage irrigation in the earlier years of the project.

It is probable that as a matter of policy, prices of the principal agricultural commodities will not be allowed to fall in future below a certain minimum level considered fair to the producer. This however is a matter on which nothing definite can be said now, and I suggest that the water-rates under the Tungabhadra Project may be reviewed 15 years after the commencement of irrigation under the project.

11. *Concessions in the earlier years of the project.*—(i) It will be very difficult for the ryots to pay the full water-rates suggested above on all the lands given water for irrigation right from the commencement of irrigation under the project. Two kinds of concessions are necessary in the earlier years to allow for the following two factors:—

(1) An irrigated crop may not give anything like the expected yield during the first or second year of irrigation owing to the violent changes involved in soil and moisture conditions and it will, in any case, take some time for soil fertility to be developed as a result of systematic manuring; and

(2) some reclamation work will be necessary on most of the lands included in the ayacuts in order to make them fit to receive water for irrigation and some time must therefore be allowed for the reclamation work to be completed.

I accordingly propose—

(a) that subject to the condition that at least two acres of land should be brought under irrigation in the first year of irrigation and in each of the succeeding years, the compulsory levy of water-cess should be limited to one-fourth of the total area for which a ryot gets irrigation in the first complete fasli for which water is provided, one-half of the total area in the second fasli, three-fourths in the third fasli and the whole irrigable area from the fourth fasli onwards. If more than the required minimum is irrigated in any of the first three faslis, water-cess may be levied on the actual extent irrigated, the rates of cess being determined by (b) below;

(b) that the rate of water-cess should be one-fourth the full rate for the crop to be grown in the first fasli in which the land is irrigated, one-half of the full rate in the second fasli, three-fourths in the third fasli and the full rate for the crop concerned from the fourth fasli onwards; and

(c) that every ryot should be allowed to combine the concessions (a) and (b) above. For example, if on a particular land the compulsory levy will commence in the second year of irrigation, under (a) no water-cess at all should be collected on that land in the first year of irrigation, only one-fourth of the full rate will be levied in the second year, half the full rate in the third year, three-fourths the full rate in the fourth year and the full rate from the fifth year onwards. Similarly for lands on which the compulsory levy will commence from the third or a subsequent year.

(ii) To illustrate how the above concessions will actually work in practice, I give in Appendix IV, the actual water-rates to be collected in different years when a ryot gets (1) mungari irrigation for eight acres, (2) irrigation for long duration paddy-cotton rotation

on eight acres and (3) hingari irrigation for eight acres, split up into two plots of four acres each in two different blocks getting irrigation in alternate years. Where the same ryot gets different kinds of irrigation, the amount to be collected in different years can be worked out for each kind of irrigation separately as in the Appendix. In such cases, I do not think it necessary to insist on a separate minimum extent on which a compulsory levy will be made for each kind of irrigation. It may be left to the ryot to decide which lands he will bring under irrigation first so long as one-fourth the total irrigable extent in his holding is newly brought under irrigation every year. Naturally, a ryot will first bring under irrigation those lands which will be cultivated with the more valuable crops.

(iii) Where the total irrigable extent for any ryot is less than eight acres, at least two acres should be brought under irrigation in the first year, another two acres in the second year and so on.

(iv) In paragraph 6 of my report C. No. 61 of 1946, dated 12th February 1946, I have recommended that a number of tractors should be purchased at Government cost and hired out to ryots and that reclamation work might commence as soon as ayacuts have been localised. If any considerable progress is made in reclamation work before the irrigation under the project commences, a correspondingly higher proportion of the irrigable lands in each holding (i.e., more than one-fourth suggested above) may be required to pay the compulsory water-rate from the first complete fasli of irrigation onwards. A larger irrigation revenue will then be realized from the beginning and this will more than make up for the cost incurred in purchasing the tractors.

12. *Financial results.*—I give in Appendix V a statement showing the ultimate return from the project under my proposals with a few notes explaining the figures adopted under different headings. If allowance is made for the fact that the irrigation revenue of Rs. 1.44 lakhs from the summer supply for which Mr. Thirumalai Ayyangar takes credit is not likely to be realized at all, the irrigation revenue under my scheme is more than under Mr. Thirumalai Ayyangar's proposals. This is mainly due to the fact that the summer supply is put to effective use. The net return from the project is however only 2.15 per cent and the reduction as compared with Mr. Thirumalai Ayyangar's figure of 4.03 per cent is mainly the result of the increase in the estimated cost of the project to Rs. 10 crores as against Rs. 5.68 crores estimated by Mr. Thirumalai Ayyangar. Under G.O. Ms. No. 4415, Public Works Department, dated 2nd December 1942, as modified by Government Memo. No. 5860-D/44-2, dated 8th February 1945, irrigation works in class A areas liable to scarcity should be considered on their own merits and need not be required to satisfy any specific rigid criterion of return by way of interest from the capital outlay, though due weight should be given to the actual return expected along with other circumstances. Considering that the Tungabhadra Project will benefit a backward tract, a return of 2.15 per cent on the project need not be regarded

as unduly low and the expenditure will be fully justified if the possibilities of development which the project affords and the larger income and purchasing power which it will give to the people of the tract are taken into consideration. The financial statement in Appendix V does not take into account the indirect return to Government. With a larger agricultural production, more agricultural products will come to market and the fact that the ryot population will have more money to spend will increase business activities not merely in agricultural commodities but in all kinds of consumption goods. There will therefore be a very large increase in the revenue from sales tax in and near the project area. What this increase is likely to be, I find it impossible to estimate from the figures in the form in which they are now available with the local officers of the Commercial Taxes Department, but the demand under sales taxes in the Bellary district up to January 1946 was Rs. 12 lakhs which is about half the normal total land revenue demand of Rs. 24 lakhs for the district. This shows the order of increase that may be expected from sales taxes as a result of the project, and if this increase is also taken into account, the return from the project may well be above 3 per cent, which may be assumed to be the current market rate of interest. Any irrigation project has a value to the tract benefited by it and to the country which is very much more than the direct and indirect revenue accruing to Government therefrom and I would only reiterate what I have said already that the fullest use should be made of the project to increase production in the project area in every possible direction.

13. I am sending copies of this report to the Secretary to Government, Public Works Department, and to the Chief Engineer for Irrigation.

T. N. S. RAGHAVAN.  
*Special Officer, Tungabhadra Project, Bellary.*

APPENDIX I.—Statement showing the average water-cess worked out from the existing wet rates in some selected villages of Siruguppa and Hospet taluks irrigated by Tungabhadra channel.

Wet taram.		Soil classification under rate in column (2).	Corresponding dry taram.	Siruguppa taluk.						Hospet taluk.					
(1)	(2)			Siruguppa village.		Desanur village.		Kampli village.							
RS.	A.			Dry rate for taram in column (4).	Difference between columns (2) and (5).	Extent of land under classification in column (3).	Total (wet and dry) for lands under this classification.	Extents of land under classification in column (3).	Total (wet and dry) for lands under this classification.	Dry rate for taram in column (4).	Difference between columns (2) and (11).	Extent of land under classification in column (3).	Total (wet and dry) for lands under this classification.		
				RS. A.	RS. A.	ACS.	RS. A.	ACS.	RS. A.	RS. A.	RS. A.	ACS.	RS. A.		
1	13 0	4 (1)	2 2	2 4	10 12	1,309-46	15,044 3	552-92	5,933 2	2 0	11 0	799-97	8,799 11		
2	11 14	4 (2)	2 2	1 11	10 3	58-77	598 11	259-46	2,643 4	1 2	10 12	46-91	504 5		
2	11 14	3 (1)	1 1	1 12	9 2	81-94	778 7	98-01	931 1	2 2	9 6	259-70	2,350 5		
2	10 10	4 (3)	2 2	1 12	4 4	..	..	29-63	248 3	0 14	9 12	64-32	627 2		
2	10 10	3 (2)	2 2	1 11	11 15	..	..	..	..	2 0	8 10	..	..		
3	10 10	4 (4)	2 2	1 11	10 16	33-18	286 3	22-32	192 2	1 12	9 7	..	..		
4	9 9	3 (3)	2 2	1 11	13 13	..	..	0-63	73 4	0 9	8 15	..	..		
4	9 9	3 (2)	2 2	1 12	8 6	..	..	..	..	1 2	8 6	..	..		
4	9 9	3 (1)	2 2	1 12	8 6	..	..	..	..	0 14	8 10	29-53	254 11		
4	9 9	3 (1)	2 2	1 12	8 6	..	..	..	..	0 14	8 10	..	..		
4	9 9	3 (1)	2 2	1 12	8 6	..	..	..	..	0 14	8 10	..	..		
5	3 4	4 (5)	2 2	0 9	11 11	..	..	3-58	27 2	0 14	8 10	..	..		
5	3 4	3 (4)	2 2	0 14	12 12	20-55	146 7	31-11	221 10	0 6	14 14	22-79	179 7		
5	3 4	3 (3)	2 2	0 14	12 12	..	..	..	..	0 14	14 6	..	..		
5	3 4	3 (2)	2 2	0 14	12 12	..	..	..	..	0 9	11 11	20-17	155 1		
5	3 4	3 (2)	2 2	0 14	12 12	..	..	..	..	1 12	12 12	..	..		
6	7 7	2 (5)	2 2	0 14	6 4	..	..	8-02	59 0	0 9	11 11	..	..		
6	7 7	2 (4)	2 2	0 9	6 9	..	..	0-61	4 0	0 9	6 4	..	..		
6	7 7	2 (3)	2 2	1 12	6 0	..	..	..	..	0 6	6 12	..	..		
6	7 7	2 (3)	2 2	0 9	6 9	..	..	..	..	0 6	6 12	..	..		
6	7 7	2 (3)	2 2	0 9	6 9	..	..	..	..	0 14	6 4	..	..		
7	5 15	5 (5)	2 2	0 6	5 9	..	..	..	..	0 6	6 12	..	..		
7	5 15	5 (4)	2 2	0 6	5 9	..	..	..	..	0 4	5 11	22-23	126 7		
7	5 15	5 (4)	2 2	0 14	5 1	..	..	..	..	0 4	5 11	..	..		
7	5 15	3 (4)	2 2	0 6	5 9	..	..	..	..	0 9	5 6	..	..		
8	4 12	5 (5)	2 2	0 4	4 8	..	..	..	..	0 4	5 11	..	..		
8	4 12	5 (5)	2 2	0 9	4 3	..	..	..	..	0 12	4 10	..	..		
8	4 12	5 (5)	2 2	0 4	4 8	..	..	..	..	0 6	4 6	..	..		
8	4 12	5 (5)	2 2	0 4	4 8	..	..	..	..	0 2	4 10	..	..		
8	4 12	5 (5)	2 2	0 4	4 8	..	..	..	..	0 2	4 10	..	..		
Total ..				1,593-90	16,853 15	1,014-29	10,326 8	1,256-62	12,997 1	Average rate per acre ..				10 5	

Village.	Survey number.	Extent.	Current rates.												
			Cash expenditure.				Value of ryots own labour, manure, cattle, etc.				Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.		On baling.		On operations other than baling.		On baling.					Profit.	Loss.
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
ACS.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.				
(a) PADDY.															
Kosigi.	467	1-47	401 12 3	45 0 0	40 0 0	90 0 0	576 12 3	4,096 S.	831 0 0	234 3 9	..				
	467	1-28	116 13 0	48 0 0	36 0 0	96 0 0	296 13 0	2,688 S. 3 C.L.	565 8 0	268 11 0	..				
	468	0-89	79 5 0	79 8 0	39 8 0	159 0 0	357 5 0	2,048 S. 6 C.L.	428 0 0	70 11 0	..				
	445 A	1-00	79 6 0	58 0 0	34 8 0	174 0 0	343 14 0	1,600 S. 4 C.L.	331 12 0	..	12 2 0				
	445 A	0-50	41 4 0	50 0 0	69 12 0	150 0 0	311 0 0	960 S. 2 C.L. 4 B.S.	198 8 0	..	112 8 0				
	445 A	0-20	19 14 0	7 0 0	14 0 0	21 0 0	61 14 0	320 S. 1 C.L. 3 B.S.	67 0 0	5 2 0	..				
	356	2-20	184 14 0	..	110 2 0	44 0 0	339 0 0	2,560 S. 10 C.L.	562 0 0	223 0 0	..				
	364	1-54	140 14 0	..	60 4 0	100 0 0	301 2 0	1,792 S. 4 C.L.	380 0 0	78 14 0	..				
	408	0-70	39 3 0	..	27 12 0	133 8 0	200 7 0	896 S. 2 C.L.	188 8 0	..	11 15 0				
	25 B	0-85	75 7 0	5 0 0	69 12 0	20 0 0	170 3 0	1,024 S. 2 1/2 C.L.	216 8 0	46 5 0	..				
Belagal.	625	0-70	56 9 0	..	39 2 0	20 0 0	115 11 0	768 S. 1 1/2 C.L.	164 4 0	48 9 0	..				
	163 A	0-60	29 1 0	..	82 8 0	108 0 0	219 9 0	768 S. 2 C.L.	163 0 0	..	56 9 0				
	669 A	0-34	18 8 0	..	24 0 0	80 0 0	22 8 0	512 S. 1 C.L.	107 0 0	..	15 0 0				
	668 A	0-37	16 6 0	..	19 0 0	125 0 0	160 6 0	640 S. 1 C.L.	133 4 0	..	27 2 0				
	668 A	1-04	101 14 0	..	44 14 0	120 0 0	266 12 0	1,664 S. 4 1/2 C.L.	354 0 0	87 4 0	..				
	663 B	0-40	25 1 1	..	12 10 0	42 8 0	80 3 0	512 S. 1 1/2 C.L.	109 8 0	29 5 0	..				

S = Seers. C.L. = Cart loads. B.S. = Bags staff.

APPENDIX II—cont.

Village.	Survey number.	Extent.	Current rates.								
			Cash expenditure.		Value of ryots own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		ACS.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.
(a) PADDY—cont.											
Belagal— cont.	660	0-52	31 8 0	..	48 0 0	30 0 0	109 8 0	640 S.	136 8 0	27 0 0	..
	248 B	0-16	16 1 0	..	32 0 6	36 4 0	84 5 6	1½ C.L. 256 S.	53 8 0	..	30 13 6
	130	1-00	47 15 0	..	64 0 0	38 0 0	149 15 0	1½ C.L. 280 S.	265 0 0	115 0 0	..
	668 B and 669 A.	1-69	107 4 0	..	95 7 0	48 0 0	250 11 0	2 C.L. 1,312 S. 4½ C.L.	201 4 0	40 9 0	..
	668 A and 669 B.	0-61	29 15 0	..	39 10 0	80 0 0	149 9 0	448 S. 1½ C.L.	100 8 0	49 1 0	..
	1	0-30	63 6 8	..	8 1 6	..	71 8 2	107 S. 4 B.	20 13 0	..	50 11 2
	2	1-73	125 6 11	..	69 12 0	..	195 2 11	894 S. 25 B.	167 12 0	..	27 6 11
	5	3-63	147 9 3	..	243 9 0	..	390 2 3	1,611 S. 59 B.	312 12 0	..	77 6 3
	8	1-15	10 1 8	..	174 4 6	..	184 6 2	486 S. 16 B.	93 0 0	..	91 6 2
	9	0-70	68 12 4	..	21 12 0	..	89 8 4	354 S. 12 B.	68 0 0	..	21 8 4
	10	2-30	152 5 8	..	77 15 0	..	230 4 8	1,284 S. 70 B.	226 8 0	35 3 4	..
	11	1-41	81 11 4	..	82 6 0	..	164 1 4	57 S. 2 B.	10 8 0	..	153 9 4
	12	0-04	62 15 0	..	45 3 0	..	108 2 0	584 S. 17 B.	107 11 0	..	0 7 0
	13	0-95	130 2 6	..	49 10 0	..	188 12 6	690 S. 2 B.	130 0 0	..	58 12 6
14	2-08	117 7 8	..	101 10 0	..	219 1 8	1,254 S. 20 B.	239 0 0	19 14 4	..	
Moka.											



Banner.

Jutar.

24 A	1-82	98 4 2	..	98 9 0	..	701 13 2	1,087 S. 32 B.	201 13 0	9 15 10	..
25	1-40	130 8 0	..	79 6 0	..	209 14 0	3,805 S. 11 B.	71 0 0	..	138
644 A	1-53	62 3 0	..	77 6 0	..	139 9 0	164 T. 33 B.	210 0 0	70 7 0	..
645 B	1-62	86 5 6	..	97 13 0	..	184 2 6	16 T. 6 C.L.	216 0 0	31 13 6	..
647 B	1-98	99 11 9	..	155 6 0	..	255 1 9	21 T. 7 1/2 C.L.	282 0 0	26 14 3	..
648	3-53	187 13 0	..	170 12 0	..	358 9 0	41 T. 13 1/2 C.L.	547 0 0	188 7 0	..
652	3-68	226 9 0	..	69 0 0	..	295 9 0	15 T. 5 C.L.	200 0 0	..	95 9 0
653	3-07	116 7 0	..	142 4 0	..	308 11 0	16 T. 5 C.L.	212 0 0	..	96 11 0
643 B-1	1-27	57 14 0	..	57 0 0	..	114 14 0	14 T. 4 C.L.	156 0 0	41 2 0	..
555 B-1A	2-12	45 11 0	..	56 8 0	..	102 3 0	8 T. 4 C.L.	88 0 0	..	143 0 0
593	2-50	52 14 9	..	52 0 0	..	104 14 9	12 T. 4 1/2 C.L.	116 4 0	11 5 3	..
552 B-2 and 554 N	1-93	43 13 0	..	54 8 0	..	98 5 0	4 1/2 C.L. 1 C.L.	44 4 0	..	54 1 0
599 A and 601 B	1-71	21 11 0	..	34 5 0	..	56 0 0	5 T. 1 1/2 C.L.	48 12 0	..	7 4 0

S = Seers. C.L. = Cart loads. B = Bundles. B. S. = Bags Staff. T = Tons.

APPENDIX II - cont.

Village.	Current rates—cont.				Pre-war rates.																						
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.				Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.																
	Profit.	Loss.	On operations other than baling including L.R.	On baling.	On operations other than baling.		On baling.		Total of columns (15) to (18).	Value of produce in column (9).	Profit.	Loss.	Profit.	Loss.													
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)															
RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.														
(a) PADDY—cont.																											
Kosigi.	389	3	9	129	11	0	22	8	0	16	8	0	60	0	0	228	11	0	342	0	0	113	5	0	195	13	0
	412	11	0	45	0	0	24	0	0	15	3	0	64	0	0	148	7	0	232	8	0	84	1	0	172	1	0
	300	3	0	39	2	0	39	12	0	14	6	0	106	0	0	199	4	0	176	0	0	..	..	..	122	8	0
	219	14	0	36	3	0	29	0	0	15	9	0	116	0	0	196	12	0	136	0	0	..	..	..	24	4	0
	87	8	0	18	12	0	25	0	0	28	0	0	100	0	0	171	12	0	81	5	0	..	..	..	34	9	0
	33	2	0	8	15	0	..	..	..	6	5	0	14	0	0	32	12	0	27	7	0	..	..	..	12	3	0
	267	0	0	82	6	0	3	7	0	35	0	0	30	4	0	147	10	0	233	5	4	..	..	..	115	15	4
	178	4	0	78	5	0	..	..	..	16	0	0	58	8	0	152	13	0	156	0	0	3	3	0	61	11	0
	121	9	0	18	6	0	..	..	..	12	4	0	77	0	0	107	10	0	78	11	0	..	..	..	48	1	0
	71	5	0	45	10	0	2	8	0	13	8	0	10	0	0	71	10	0	89	0	0	17	6	0	29	14	0
68	9	0	24	6	0	..	..	..	18	8	0	12	0	0	54	14	0	66	15	0	12	1	0	24	1	0	
51	7	0	14	10	0	..	..	..	29	14	0	66	0	0	110	8	0	67	0	0	..	..	..	43	2	0	
64	8	0	8	12	0	..	..	..	8	5	0	48	0	0	65	1	0	44	0	0	..	..	..	21	7	0	
97	14	0	7	11	0	..	..	..	7	3	0	75	0	0	89	14	0	54	11	0	..	..	..	38	13	0	
207	14	0	40	4	0	..	..	..	13	13	0	72	0	0	126	1	0	145	8	0	19	0	0	91	6	0	
71	13	0	11	10	0	..	..	..	5	4	0	25	8	0	42	6	0	45	0	0	12	10	0	28	2	0	
57	0	0	15	1	0	..	..	..	14	8	0	25	8	0	55	1	0	55	14	0	13	0	0	28	5	0	
5	6	6	5	9	0	..	..	..	99	0	0	24	12	0	39	7	9	22	0	0	..	..	..	17	7	0	
153	1	0	21	0	0	..	..	..	29	6	0	23	12	0	74	2	6	109	0	0	34	13	6	59	9	6	
8	8	9	46	10	0	..	..	..	43	11	6	30	0	0	120	5	6	118	4	6	..	..	..	22	1	0	
12	9	1	13	13	0	..	..	..	19	0	0	50	0	0	82	18	0	40	11	0	..	..	..	42	12	0	
..	..	..	27	11	8	..	..	..	3	1	0	..	..	..	31	0	8	7	3	0	..	..	..	23	13	8	
..	..	..	61	2	11	..	..	..	24	3	6	..	..	..	85	6	5	59	0	0	..	..	..	26	6	5	
..	..	..	71	11	9	..	..	..	95	12	0	..	..	..	167	7	9	108	1	0	..	..	..	59	6	9	
..	..	..	7	0	8	..	..	..	67	3	6	..	..	..	74	4	9	32	6	0	..	..	..	41	12	0	
..	..	..	32	4	4	..	..	..	8	7	6	..	..	..	40	11	10	23	10	0	..	..	..	17	1	1	
35	3	4	73	14	2	..	..	..	28	14	6	..	..	..	102	12	8	89	0	0	..	..	..	13	12	8	
..	..	..	37	4	10	..	..	..	38	11	6	..	..	..	76	0	4	4	1	0	..	..	..	71	15	4	
..	..	..	29	13	6	..	..	..	16	15	6	..	..	..	46	13	0	37	5	0	..	..	..	9	8	0	
..	..	..	62	9	6	..	..	..	19	0	0	..	..	..	81	9	6	45	10	0	..	..	..	35	15	6	
19	14	4	58	14	8	..	..	..	47	9	0	..	..	..	95	14	8	83	6	0	..	..	..	12	8	8	

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Bannur.

Jatur.

9 15 10	138 5 0	38 2 0	40 10 6	78 10 8	70 11 0	7 15 8	67 15 0
70 7 0		64 7 6	27 12 0	92 4 0	25 2 0	07 2 0	67 15 0
31 13 6		24 6 0	33 10 0	58 0 0	105 0 0	47 0 0	47 0 0
26 14 3		43 0 0	26 10 0	69 10 0	108 0 0	38 6 0	38 6 0
188 7 0		44 14 9	52 1 0	96 15 9	141 0 0	44 0 3	44 0 3
	95 9 0	90 6 0	48 15 0	139 5 0	273 8 0	134 3 0	134 3 0
	96 11 0	111 3 0	23 0 0	124 3 0	100 0 0	34 3 0	
41 2 0		77 1 0	52 10 0	129 11 0	106 0 0	23 11 0	
	143 0 0	28 9 0	20 6 0	48 15 0	78 0 0	29 1 0	29 1 0
		23 7 0	27 6 0	50 13 0	56 0 0	5 3 0	5 3 0
		28 10 9	18 0 4	46 11 1	63 12 0	17 0 11	17 0 11
11 5 3	54 1 0	23 12 0	22 7 0	46 3 0	30 8 0	15 11 0	
	7 4 0	9 15 0	12 12 0	22 11 0	27 8 0	4 13 0	4 13 0

## ABSTRACT.

	Current rates.		Pre-war rates.	
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Average for fields which show a profit when baling charges are <i>included</i> in cultivation expenses.	1,778 13 8		692 10 0	
	<u>32-01</u>	= 54 1 0	<u>27-26</u>	= 25 6 0
2 Average for fields which show a loss when baling charges are <i>included</i> in cultivation expenses.	1,053 14 2		830 6 3	
	<u>28-49</u>	= 37 0 0	<u>34-14</u>	= 24 5 0
3 Average for all fields when baling charges are <i>included</i> in cultivation expenses.	724 15 1		137 12 3	
	<u>61-40</u>	= 11 13 0	<u>61-40</u>	= (loss.)
4 Average for fields which show a profit when baling charges are <i>excluded</i> in cultivation expenses.	3,519 6 9		1,567 11 0	
	<u>36-58</u>	= 96 3 0	<u>34-32</u>	= 45 15 0
5 Average for fields which show a loss when baling charges are <i>excluded</i> in cultivation expenses.	737 4 8		476 0 0	
	<u>24-82</u>	= 31 11 0	<u>27-08</u>	= 17 9 0
6 Average for all fields when baling charges are <i>excluded</i> in cultivation expenses.	2,732 2 1		1,091 11 0	
	<u>61-40</u>	= 44 8 0	<u>61-40</u>	= 17 12 0

## APPENDIX II—cont.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		ACS.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	MAUNDS.	RS. A. P.	RS. A. P.	RS. A. P.
(b) ONIONS.											
Kosigi.	466 B	0.97	290 2 0	36 0 0	19 15 0	108 0 0	454 1 0	525	750 0 0	295 15 0	..
	467	0.63	246 7 0	19 0 0	12 0 0	57 0 0	334 7 0	476	587 0 0	252 9 0	..
Belagal.	136 R	0.25	28 8 0	..	7 1 0	15 0 0	51 1 0	84	132 0 0	80 15 0	..
			+0 8 0	..	..	..	..	..	..	..	..
Genikihal.	255 B	0.05	3 13 0	..	11 4 6	0 10 0	15 11 6	49	84 0 0	69 4 6	..
	447	0.80	160 9 3	1 8 0	11 12 0	65 8 0	239 5 3	265	506 0 0	266 10 9	..
	271 A	1.12	33 14 3	3 0 0	12 12 0	73 12 0	123 6 3	178	248 0 0	124 9 9	..
	381 F	0.64	54 12 6	..	22 13 0	73 8 0	151 1 6	243	320 0 0	168 14 6	..
	381 C	0.75	71 6 9	2 7 0	11 7 0	92 12 0	178 0 9	142	166 3 0	..	11 13 9
	383 C	0.80	87 3 6	..	15 3 0	17 10 0	120 6 0	200	400 0 0	279 15 6	..
	383 B & C	1.12	76 3 0	..	26 11 6	29 6 0	132 4 6	136	357 0 0	224 11 6	..
	356	0.80	1 11 0	32 7 0	25 15 0	50 8 0	110 9 0	162	169 14 0	59 8 0	..
	355	0.32	26 3 0	..	22 6 0	49 8 0	98 1 0	123	141 0 0	42 15 0	..
	104 A-2	1.00	38 2 0	..	19 2 0	62 6 0	119 10 0	226	411 8 0	291 14 0	..
	381 B	0.70	32 14 0	..	21 0 0	83 5 0	137 3 0	100	100 0 0	..	37 3 0
	387 A	0.86	36 3 0	..	32 11 0	33 4 0	102 2 0	150	175 7 6	73 5 6	..
Tornagal	37 B	1.50	103 13 0	..	88 8 0	81 0 0	273 5 0	402	410 4 0	136 15 0	..
	39 and 40 A.	3.00	266 4 0	..	114 2 0	195 6 0	575 12 0	835	879 4 0	303 8 0	..
Bannur.	228	1.25	141 15 0	..	76 5 0	99 0 0	317 4 0	377	393 5 0	76 1 0	..
	353, 355 and 366-1 and 2.	4.40	696 7 6	..	..	..	696 7 6	956	1233 12 0	537 4 6	..

Village.	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.				Value of ryots' own labour, manure, cattle, etc.		Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R.		On operations other than baling.		Total of columns (15) to (18).	Value of produce in column (9).	Profit.	Loss.	Profit.	Loss.
			(13)	(14)	(15)	(16)						
	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
(b) ONIONS—cont.												
Kosigi.	439 15 0	...	107 5 0	18 0 0	9 15 0	72 0 0	207 4 0	187 8 0	...	19 12 0	70 4 0	...
	328 9 0	...	104 14 0	9 8 0	6 0 0	38 0 0	158 6 0	170 0 0	11 10 0	...	59 2 0	...
Belagal.	95 15 0	...	13 8 0	...	3 8 6	9 0 0	26 0 6	30 0 0	3 15 6	...	12 15 6	...
	68 14 6	...	1 9 0	...	5 2 0	0 6 0	7 1 0	17 8 0	10 7 0	...	10 13 0	...
	333 10 9	...	61 3 0	0 6 0	6 11 0	29 9 0	97 13 0	132 8 0	34 11 0	...	64 10 0	...
	211 5 9	...	16 13 6	0 13 0	9 15 6	23 11 0	56 5 0	89 0 0	32 11 0	...	62 3 0	...
	242 6 6	...	24 4 6	...	8 3 0	38 4 0	70 11 6	121 8 0	50 12 6	...	89 0 6	...
	83 5 3	...	24 11 6	4 8 0	10 11 6	36 7 0	76 6 0	83 1 6	6 11 6	...	47 10 6	...
Genikihal.	295 2 6	...	30 7 6	...	5 10 0	10 0 0	46 1 6	100 0 0	53 14 6	...	63 14 6	...
	254 1 6	...	29 6 6	...	4 4 0	16 6 0	50 0 6	68 0 0	17 15 6	...	34 5 6	...
	142 4 0	...	0 13 0	14 10 0	7 7 0	27 4 0	50 2 0	81 0 0	30 14 0	...	72 12 0	...
	92 7 0	...	11 1 0	...	4 2 0	23 8 0	42 11 0	61 8 0	18 13 0	...	42 5 0	...
	354 4 0	...	23 12 0	...	7 2 6	30 0 0	60 14 6	113 0 0	52 1 6	...	82 1 6	...
	46 2 0	...	13 15 0	...	6 5 6	39 14 0	60 2 6	50 0 0	...	10 2 6	29 11 6	...
	106 9 6	...	15 15 0	...	13 0 0	16 8 0	45 13 0	75 0 0	29 3 0	...	45 11 0	...
	217 15 0	...	51 12 0	...	40 4 0	43 13 0	135 13 0	201 0 0	65 3 0	...	109 0 0	...
Tornagal.	498 14 0	...	132 6 0	...	56 5 0	82 1 0	270 12 0	417 4 0	146 8 0	...	228 9 0	...
	175 1 0	...	70 15 0	...	37 15 0	54 8 0	163 6 0	188 4 0	24 14 0	...	79 6 0	...
Bannur.	537 4 6	...	240 12 6	...	...	...	240 12 6	478 0 0	237 3 6	...	237 3 6	...

ABSTRACT.

	Current rates.		Pre-war rates.	
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Average for fields which show a profit when baling charges are included in cultivation expenses.	3,283 13 6	= 168 5 0	827 8 6	= 43 7 0
2 Average for fields which show a loss when baling charges are included in cultivation expenses.	19-51	= 32 10 0	19-29	= 15 14 0
3 Average for all fields when baling charges are included in cultivation expenses.	1-45	= 154 5 0	1-67	= 38 1 0
All fields show a profit if baling charges are excluded from cultivation expenses and the average profit per acre on this basis is	3,234 12 9		797 10 0	
	20-96		20-96	
	215 4 0		98 11 0	

APPENDIX II--cont.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.					
			On operations other than baling including L.R. (4)	On baling. (5)	On operations other than baling. (6)	On baling. (7)				Profit. (11)	Loss. (12)				
												ACS.		RS. A. P.	
												RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
(c) CHILLIES.															
Kosigi	491 A	0-70	121 11 0	..	39 0 0	99 0 0	259 11 0	62	278 8 0	18 13 0	..				
	488 B	0-65	93 7 0	16 8 0	27 0 0	33 0 0	169 15 0	42	191 15 9	22 0 9	..				
	467	0-82	72 15 0	12 0 0	10 0 0	24 0 0	118 15 0	35	140 10 8	21 11 8	..				
	445 A	1-00	168 5 0	36 0 0	14 10 0	108 0 0	320 15 0	69	364 5 4	37 6 4	..				
	449 B	1-56	300 14 0	46 0 0	60 0 0	138 0 0	540 14 0	112	956 10 8	411 12 8	..				
	431 B	1-80	295 14 0	50 0 0	84 4 0	150 0 0	580 2 0	122	612 0 8	31 14 0	..				
	406-1	0-20	23 3 0	..	24 7 3	37 8 0	85 2 3	12 1/2	36 10 8	..	48 7 7				
	102	0-30	2 12 0	..	37 0 0	42 8 0	82 4 0	36	96 0 0	13 12 0	..				
	356	0-40	21 6 0	..	32 2 0	13 8 0	67 0 0	18	53 5 4	..	13 10 8				
	406-3	0-20	29 5 0	..	18 9 3	30 0 0	77 14 3	15	40 10 8	..	37 3 7				
	408	0-07	2 2 0	..	18 11 0	2 8 0	12 4 0	3	8 0 0	..	4 14 0				
	248 B	0-40	21 7 0	..	24 1 3	70 0 0	115 8 3	35	105 0 0	..	10 8 3				
	248 C	0-50	54 13 6	..	16 8 10	62 8 0	133 14 4	44	135 10 8	1 12 4	..				
	255 B	0-78	38 12 0	..	98 5 4	67 8 0	204 9 4	126	337 5 4	132 12 0	..				
	255 C	0-50	32 10 0	..	53 3 6	75 0 0	160 13 6	71	190 0 0	29 2 6	..				
255 D	1-00	46 5 0	..	84 8 0	75 0 0	205 13 0	97 1/2	266 10 8	60 13 8	..					
255 E	1-00	61 5 0	..	59 1 0	75 0 0	195 5 0	95	233 5 4	38 0 4	..					
136 B	0-30	49 9 0	..	33 12 0	54 0 0	137 6 0	51	174 0 0	36 10 0	..					
138	0-30	8 9 0	..	36 2 0	24 0 0	63 11 0	12	88 0 0	19 5 0	..					
165 A	0-13	0 12 0	..	12 4 0	8 0 0	21 0 0	5	13 5 4	..	7 10 8					
165 C	0-40	4 15 0	..	94 2 0	28 0 0	67 1 0	12	74 10 8	7 9 8	..					
167	0-20	1 8 0	..	25 6 0	24 0 0	50 14 0	11	29 5 4	..	21 8 8					
66 A	0-30	5 3 0	..	33 5 0	16 0 0	54 8 0	19 1/2	84 10 8	30 2 8	..					
406-2	0-40	51 14 0	..	30 2 4	34 0 0	116 0 4	23 1/2	77 5 4	..	38 11 0					
524 A	0-40	35 8 0	..	34 2 4	38 0 0	107 10 4	49 1/2	215 5 4	107 11 0	..					
524 A	0-20	15 12 6	..	33 11 2	42 0 0	91 7 8	26 1/2	136 5 4	44 13 8	..					
Dasogi	66	1-48	26 3 0	..	41 4 0	..	67 7 0	46 1/2	96 8 0	29 1 0	..				
									57 4 0	20 1 0	..				

Fornagal..	52	0-60	47 10 0	..	28 6 0	27 0 0	103 0 0	31	86 0 0	17 0 0
	45	0-80	57 6 0	..	43 10 0	75 0 0	176 0 0	62	240 6 0	..
	37 B	0-50	35 3 0	..	14 10 0	50 0 0	99 13 0	75	312 0 0	112 3 0
	228	0-50	20 14 0	..	11 11 0	60 0 0	92 9 0	44	191 0 0	98 7 0
	326 and 231.	2-50	101 11 0	..	206 0 0	..	122 1 0	22	308 0 0	185 15 0
Genkihal,	223 and 222.	0-50	22 13 0	..	31 14 0	90 7 0	145 2 0	SEERS. 3,474	183 0 0	37 14 0
	262 A, B & C.	1-04	35 6 0	6 0 0	48 5 0	49 12 0	130 7 0	2,596	166 8 0	27 1 0
	263 A & B.	0-38	48 10 0	2 0 0	19 0 0	37 12 0	107 4 0	2,826	135 0 0	27 12 0
	266 A	0-30	4 2 0	2 7 0	8 10 0	37 1 0	52 4 0	917	46 0 0	6 4 0
	253-2 and 254.	0-50	12 9 0	..	12 2 0	47 12 0	72 7 0	720	31 8 0	40 15 0
	376 and 218.	0-67	2 11 0	..	27 7 0	58 15 0	89 1 0	848	35 0 0	54 1 0
	447 M, N, O & P.	3-10	81 1 0	4 9 0	71 10 0	94 2 0	251 6 0	2,166	216 7 0	34 15 0
	271 A	0-85	74 5 0	12 0 0	62 10 0	99 5 0	248 4 0	4,651	221 0 0	27 4 0
	381 B	1-00	34 2 0	..	29 9 0	135 1 0	198 12 0	3,852	220 0 0	21 4 0
	382 C	0-82	27 8 0	..	22 5 0	70 11 0	120 8 0	3,793	180 2 0	59 10 0
	382 B	0-98	46 6 0	..	52 4 0	117 4 0	215 14 0	4,638	252 8 0	36 10 0
	383 C	0-73	91 14 0	..	49 2 0	98 12 0	239 12 0	2,925	162 8 0	77 4 0
	383 D	0-72	59 4 0	0 7 0	73 1 0	90 2 0	222 14 0	5,029	252 4 0	29 6 0
	386 A	0-84	30 12 0	..	17 14 0	51 4 0	99 14 0	2,884	153 8 0	53 10 0
	385 C and 386 C.	0-81	36 3 0	1 1 0	51 11 0	10 8 0	108 7 0	1,100	55 0 0	53 7 0
	356	0-96	78 2 0	4 8 0	35 10 0	112 7 0	290 11 0	2,315	130 14 0	99 13 0
	355	0-39	28 0 0	..	18 9 0	85 6 0	131 15 0	1,892	98 0 0	33 15 0
384	1-06	30 1 0	..	24 10 0	93 13 0	148 8 0	1,504	65 0 0	83 8 0	
389 B	0-60	15 14 0	..	26 12 0	47 14 0	90 8 0	802	44 0 0	46 8 0	
379 C	1-50	30 14 0	3 3 0	23 0 0	75 10 0	132 11 0	2,706	169 6 0	36 11 0	
381 C	1-17	83 8 0	24 8 0	38 13 0	118 7 0	265 4 0	4,623	240 0 0	25 4 0	

APPENDIX II—cont.

Village.	Current rates—cont.				Pre-war rates.							
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.				Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.	Total of columns (15) to (18).	Value of produce in column (9).	Profit.	Loss.	Profit.	Loss.
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. F.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
(c) CHILLIES—cont.												
Kosigi	117 13 0	..	49 7 0	..	19 10 0	60 8 0	129 9 0	103 10 0	..	25 14 6	34 9 6	..
	71 8 9	..	41 15 0	8 4 0	10 0 0	22 0 0	82 3 0	72 8 0	..	9 11 0	20 9 0	..
	57 11 8	..	31 3 0	6 0 0	5 0 0	16 0 0	58 3 0	59 12 0	1 9 0	..	23 9 0	..
	181 6 4	..	59 15 0	18 0 0	7 4 0	72 0 0	157 3 0	133 5 6	..	23 13 6	66 2 6	..
	595 12 8	..	127 18 0	23 0 0	24 0 0	92 0 0	266 13 0	311 12 0	44 15 0	..	159 15 0	..
	231 14 0	..	106 10 0	25 0 0	34 6 0	100 0 0	266 0 0	231 8 0	..	34 8 0	90 8 0	..
	..	10 15 7	10 12 0	..	6 3 7	20 0 0	36 15 7	15 0 0	..	21 15 7	..	1 15 7
	56 4 0	..	1 8 0	..	16 8 0	21 4 0	39 4 0	45 0 0	5 12 0	..	27 0 0	..
	..	0 2 8	10 15 0	..	11 3 0	8 4 0	30 6 0	22 8 0	..	7 14 0	0 6 0	..
	..	7 3 7	10 13 0	..	7 4 7	18 0 0	36 1 7	19 0 0	..	17 0 7	0 15 5	..
	..	2 6 0	0 10 0	..	3 10 0	1 9 0	5 13 0	3 12 0	..	2 1 0	..	0 8 0
	59 7 9	..	11 0 0	..	10 0 6	42 0 0	63 0 6	44 2 3	..	18 14 3	23 1 9	..
	64 4 4	..	19 4 6	..	7 4 6	37 8 0	64 1 0	55 11 3	..	8 5 9	29 2 3	..
	200 4 0	..	19 0 0	..	37 2 8	40 8 0	96 10 8	158 2 0	61 7 4	..	101 15 4	..
	104 2 6	..	15 8 0	..	22 9 9	45 0 0	82 15 0	89 1 0	6 1 3	..	51 1 3	..
135 13 8	..	22 8 0	..	34 8 0	45 0 0	102 0 0	121 14 0	19 14 0	..	64 14 0	..	
113 0 4	..	28 4 0	..	26 8 0	45 0 0	99 12 0	118 12 0	19 0 0	..	64 0 0	..	
90 10 0	..	19 5 0	..	13 14 6	32 12 0	65 15 6	77 12 0	11 12 6	..	44 8 6	..	
43 5 0	..	4 1 0	..	16 9 0	15 0 0	35 10 0	29 0 0	..	6 10 0	8 6 0	..	
0 5 4	..	0 6 0	..	6 2 0	5 0 0	11 8 0	6 4 0	..	5 4 0	..	0 4 0	
35 9 8	..	2 7 0	..	17 1 0	17 8 0	27 0 0	25 8 0	..	11 8 0	6 0 0	..	
2 7 4	..	0 11 0	..	12 13 0	15 0 0	28 8 0	13 12 0	..	14 12 0	0 4 0	..	
46 2 8	..	2 9 0	..	14 10 0	10 0 0	27 3 0	33 12 0	6 9 0	..	16 9 0	..	
..	4 11 0	17 3 0	..	12 1 2	21 4 0	50 8 2	32 12 0	..	17 12 2	3 7 10	..	
145 11 0	..	16 8 0	..	15 1 2	23 12 0	55 5 2	83 4 0	27 14 10	..	51 10 10	..	
86 13 8	..	7 12 0	..	15 13 7	26 4 0	49 13 7	55 2 0	5 4 5	..	31 8 5	..	
29 1 0	..	14 13 0	..	20 6 0	..	35 3 0	46 0 0	10 13 0	..	10 13 0	..	
20 1 0	..	13 9 0	..	6 13 0	..	20 6 0	19 0 0	..	1 6 0	..	1 6 0	



Ganikhal.	10 0 0	...	22 11 0	..	14 14 0	13 8 0	51 1 0	31 0 0	..	20 1 0	..	6 9 0
	148 6 0	...	28 10 0	...	21 13 0	32 7 0	82 14 0	62 4 0	..	20 10 0	11 13 0	..
Bannur	162 3 0	...	17 8 0	...	7 9 0	23 12 0	48 13 0	75 0 0	26 3 0	..	49 15 0	..
	158 7 0	...	10 7 0	...	5 13 0	25 12 0	42 0 0	44 0 0	2 0 0	..	27 12 0	..
	185 15 0	...	47 2 0	...	7 13 0	..	54 15 0	154 0 0	99 1 0	..	99 1 0	..
	128 5 0	...	11 10 0	...	12 12 0	41 0 0	65 5 0	72 6 0	7 0 0	..	48 0 0	..
	82 13 0	...	17 4 0	1 7 0	25 7 0	17 12 0	61 14 0	71 0 0	9 11 0	..	28 14 0	..
	67 6 0	...	23 7 0	0 6 0	5 15 0	17 4 0	47 0 0	58 14 0	11 14 0	..	29 8 0	..
	33 4 0	...	2 2 0	0 13 0	3 0 0	17 11 0	23 10 0	19 2 0	..	4 8 0	14 0 0	..
	8 13 0	...	6 11 0	..	4 0 0	23 4 0	33 15 0	15 0 0	..	18 15 0	4 5 0	..
	4 14 0	...	1 10 0	..	10 7 0	27 12 0	39 13 0	17 11 0	..	22 2 0	5 10 0	..
	63 12 0	...	41 12 0	1 2 0	30 11 0	49 4 0	122 13 0	65 2 0	..	57 11 0	..	7 5 9
Tornagal..	34 1 0	...	35 0 0	1 10 0	13 12 0	6 8 0	56 14 0	96 14 0	40 0 0	..	48 2 0	..
	156 5 0	...	15 14 0	..	9 5 0	62 7 0	87 10 0	80 4 0	..	7 6 0	55 1 0	..
	130 5 0	...	11 15 0	..	7 4 0	35 8 0	54 11 0	79 0 0	24 5 0	..	59 13 0	..
	153 14 0	...	18 9 0	..	21 0 0	53 4 0	92 13 0	99 2 0	6 5 0	..	59 9 0	..
	21 8 0	...	40 7 0	..	13 0 0	43 3 0	96 10 0	60 15 0	..	35 11 0	7 0 0	..
	119 15 0	...	27 4 0	0 4 0	30 9 0	43 8 0	101 9 0	109 0 0	7 7 0	..	51 3 0	..
	104 14 0	...	15 4 0	..	5 0 0	26 4 0	46 8 0	72 10 0	26 2 0	..	52 6 0	..
	..	32 14 0	15 11 0	0 4 0	5 5 0	26 12 0	48 0 0	22 15 0	..	25 1 0	1 15 0	..
	17 2 0	..	33 4 0	1 2 0	12 0 0	58 15 0	105 5 0	53 6 0	..	51 15 0	8 2 0	..
	51 7 0	..	13 0 0	..	6 4 0	37 8 0	56 12 0	39 7 0	..	17 5 0	20 3 0	..
10 5 0	..	14 4 0	..	7 15 0	49 6 0	71 9 0	31 5 0	..	40 4 0	9 2 0	..	
1 6 0	..	8 11 0	..	10 10 0	27 1 0	46 6 0	16 11 0	..	29 11 0	..	2 10 0	
115 8 0	..	12 0 0	0 11 0	8 15 0	35 8 0	57 2 0	73 2 0	16 0 0	..	52 3 0	..	
117 11 0	..	40 15 0	9 3 0	13 13 0	66 0 0	129 15 0	96 5 0	..	33 10 0	41 9 0	..	

ABSTRACT.

	Current rates.		Pre-war rates.	
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Average for fields which show a profit when baling charges are <i>included</i> in cultivation expenses.	1,915 2 3		497 0 4	
	<u>27-07</u>	= 70 12 0	<u>19-77</u>	= 25 2 0
2 Average for fields which show a loss when baling charges are <i>included</i> in cultivation expenses.	782 12 5		612 4 4	
	<u>13-74</u>	= 57 0 0	<u>21-04</u>	= 29 15 0
3 Average for all fields <sup>a</sup> when baling charges are <i>included</i> in cultivation expenses.	1,132 5 10		115 4 0	
	<u>40-81</u>	= 27 12 0	<u>40-81</u>	= 2 13 0
4 Average for all fields which show a profit when baling charges are <i>excluded</i> in cultivation expenses.	4,626 0 8		1,716 10 7	
	<u>38-73</u>	= 119 7 0	<u>35-11</u>	= 48 14 0
5 Average for fields which show a loss when baling charges are <i>excluded</i> in cultivation expenses.	58 4 6		20 9 7	
	<u>38-73</u>	= 28 1 0	<u>5-70</u>	= 3 9 0
6 Average for all fields when baling charges are <i>excluded</i> in cultivation expenses.	4,567 11 10		1,696 1 0	
	<u>77-46</u>	= 58 15 6	<u>40-31</u>	= 41 9 0

APPENDIX II—cont.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R. (4)	On baling. (5)	On operations other than baling. (6)	On baling. (7)				Profit. (11)	Loss. (12)
(1)	(2)	(3)	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.	SEERS.	RS. A. P.	RS. A. P.	RS. A. P.
(d) RAGI.											
Tornagal.	228	0-60	14 9 0	..	14 15 0	42 6 0	71 14 0	290	105 11 0	33 13 0	..
	45	0-30	28 14 0	..	8 8 0	27 0 0	64 6 0	220	76 5 0	11 15 0	..
	664	0-22	12 7 0	..	32 13 0	18 0 0	63 4 0	224	44 8 0	..	18 12 0
Belagal.	445 A	0-60	76 13 0	..	18 4 0	..	95 1 0	576	114 0 0	18 15 0	..
	465 B	0-54	31 0 0	..	12 0 0	48 0 0	91 0 0	512	101 8 0	10 8 0	..
	165 A	0-81	27 10 0	..	46 8 0	76 0 0	150 2 0	916	189 12 0	39 10 0	..
Moka.	1	0-30	5 6 0	..	11 7 0	..	16 13 0	120	3 2 0	..	13 11 0
	2	1-35	19 6 0	..	19 14 0	..	39 4 0	102	24 13 0	..	14 7 0
	13	3-00	37 7 0	..	41 10 0	..	79 1 0	152	36 0 0	..	43 1 0
	17	1-60	22 0 0	..	24 4 0	..	46 4 0	416	96 0 0	49 12 0	..
	26	1-00	12 14 0	..	37 5 0	..	50 3 0	30	7 5 0	..	42 14 0
Genikihal.	385 A and 383 E.	0-71	8 2 0	..	8 4 0	12 0 0	28 6 0	450	98 2 0	67 12 0	..
	104 B	0-06	0 1 0	..	2 2 0	1 5 0	3 8 0	16	3 8 0	..	..

Village.	Current rates—cont.		Pre-war rates.									
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.				Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including.		On operations other than baling.		Total of columns (15) to (18).	Value of produce in column (9).	Profit.	Loss.	Profit.	Loss.
			L.R. (15)	On baling. (16)	On baling. (17)	On baling. (18)						
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	
(d) RAGI—cont.												
Tornagal.	76 3 0	..	7 9 0	..	10 11 0	19 4 0	37 8 0	21 2 0	..	16 6 0	2 14 0	..
Belagal.	38 15 0	..	14 5 0	..	3 6 0	13 2 0	30 13 0	14 12 0	..	16 1 0	..	2 15 0
	..	0 12 0	6 1 0	..	12 4 0	11 4 0	29 9 0	14 5 0	..	15 4 0	..	4 0 0
Kosigi.	18 15 0	..	30 1 0	..	8 12 0	..	38 13 0	36 10 0	..	2 3 0	..	2 3 0
	58 8 0	..	10 7 0	..	6 0 0	30 0 0	46 7 0	32 10 0	..	13 13 0	16 3 0	..
	115 10 0	..	11 15 0	..	18 0 0	45 0 0	74 15 0	60 15 0	..	14 0 0	31 0 0	..
Moko.	..	13 11 0	3 0 0	..	3 12 0	..	6 12 0	0 15 0	..	5 13 0	..	5 13 0
	..	14 7 0	12 12 0	..	7 6 0	..	20 2 0	7 5 0	..	12 13 0	..	12 13 0
	..	43 1 0	25 7 0	..	15 1 0	..	40 8 0	10 9 0	..	29 15 0	..	29 15 0
	49 12 0	..	14 7 0	..	9 15 0	..	24 6 0	27 14 0	3 8 0	..	3 8 0	..
	..	42 14 0	10 4 0	..	19 13 0	..	30 1 0	2 3 0	..	27 14 0	..	27 14 0
Gemikihal.	79 12 0	..	3 11 0	..	7 0 0	0 15 0	11 10 0	23 8 0	11 14 0	..	12 13 0	..
	1 5 0	..	..	..	1 1 0	0 11 0	1 12 0	1 1 0	..	0 11 0	..	..

ABSTRACT.

	At current rates.		At pre-war rates.	
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Average for fields which show a profit when baling charges are included in cultivation expenses.	232 5 0	= 45 0 0	15 6 0	= 6 10 0
2 Average for fields which show a loss when baling charges are included in cultivation expenses.	5.16 132 13 0	= 22 10 0	2.31 154 13 0	= 17 10 0
3 Average for all fields when baling charges are included in cultivation expenses.	5.87 99 8 0	= 8 10 0	8.77 139 7 0	= 12 9 0
4 Average for fields which show a profit when baling charges are excluded in cultivation expenses.	11.08 439 0 0	= 84 4 0	11.08 66 6 0	(loss.) = 15 9 0
5 Average for fields which show a loss when baling charges are excluded in cultivation expenses.	5.21 114 13 0	= 19 9 0	4.26 85 9 0	= 12 10 0
6 Average for all fields when baling charges are excluded in cultivation expenses.	5.87 324 3 0	= 29 4 0	6.77 19 3 0	= 1 11 0
	11.08		11.08	(loss.)

## APPENDIX II— cont.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		ACS.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	SEERS.	RS. A. P.	RS. A. P.	RS. A. P.
(e) JAVA (GLUMED WHEAT).											
Moka.	1	0-30	10 7 0	..	13 3 0	..	23 10 0	21	4 3 0	..	19 7 0
	2	1-30	73 0 0	..	72 4 0	..	145 4 0	258	51 10 0	..	93 10 0
	5	0-75	37 10 0	..	102 12 0	..	140 6 0	512	102 7 0	..	3 15 0
	6	0-10	2 5 0	..	7 8 0	..	9 13 0	61	12 3 0	2 6 0	..
	10	0-40	5 7 0	..	7 10 0	..	13 1 0	163	32 10 0	19 9 0	..
	17	0-50	16 1 0	..	27 10 0	..	43 11 0	136	27 3 0	..	16 8 0
	22 B	1-00	23 0 0	..	18 7 0	..	41 7 0	321	64 3 0	22 12 0	..
	23	1-00	19 8 0	..	35 10 0	..	55 2 0	648	128 3 0	73 1 0	..
	24 A	0-50	8 15 0	..	19 5 0	..	28 4 0	256	51 3 0	22 15 0	..
	27	0-59	17 6 0	..	40 8 0	..	57 14 0	124	24 13 0	..	23 1 0
Genikihal.	29	0-42	14 13 0	..	12 3 0	..	27 0 0	202	40 7 0	13 7 0	..
	376	0-20	0 3 0	..	10 15 0	15 12 0	26 14 0	120	24 0 0	..	2 14 0
	271 A	0-93	7 6 0	..	20 8 0	81 4 0	109 2 0	480	96 0 0	..	13 2 0
	374	1-35	6 14 0	..	27 9 0	44 5 0	78 12 0	390	78 0 0	..	0 12 0
Bannur.	221	0-22	3 14 0	..	14 5 0	40 0 0	58 3 0	480	96 0 0	37 13 0	..
	355	0-65	42 6 0	..	10 15 0	..	53 5 0	1,080	207 0 0	153 11 0	..
	353	0-85	33 11 0	..	3 5 0	..	37 0 0	456	152 8 0	115 8 0	..
	237	0-50	27 6 0	..	11 9 0	..	38 15 0	396	132 5 0	93 6 0	..

Village.	Current rates—cont.				Pre-war rates.								
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.			Total of columns (15) to (18).	Value of produce in column (9).	Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including.	On baling.	On operations other than baling.	On baling.	Profit.			Loss.	Profit.	Loss.	
	(13)	(14)	L.R. (15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	
RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.		
Moka.	..	19 7 0	4 14 0	..	5 1 0	..	9 15 0	1 1 0	..	8 14 0	..	8 14 0	
	..	93 10 0	17 8 0	..	34 8 0	..	52 0 0	12 15 0	..	39 1 0	..	30 1 0	
	..	37 15 0	14 12 0	..	10 3 0	..	24 5 0	25 10 0	0 11 0	..	0 11 0	..	
	2 6 0	..	1 7 0	..	3 1 0	..	4 8 0	3 1 0	..	1 7 0	..	1 7 0	
	19 9 0	..	2 4 0	..	2 6 0	..	4 10 0	8 2 0	3 8 0	..	3 8 0	..	
	..	16 8 0	7 2 0	..	10 8 0	..	17 10 0	6 13 0	..	10 13 0	..	10 13 0	
	22 12 0	..	12 5 0	..	8 6 0	..	20 11 0	16 1 0	..	4 10 0	..	4 10 0	
	73 1 0	..	10 8 0	..	12 13 0	..	23 5 0	32 1 0	8 12 0	..	8 12 0	..	
	22 15 0	..	4 2 0	..	7 9 0	..	11 11 0	12 12 0	1 1 0	..	1 1 0	..	
	..	33 1 0	8 13 0	..	14 10 0	..	23 7 0	6 3 0	..	17 4 0	..	17 4 0	
Genikihal.	13 7 0	..	6 5 0	..	4 7 0	..	10 12 0	10 2 0	..	0 10 0	..	0 10 0	
	12 14 0	..	0 3 0	..	4 1 0	6 12 0	11 0 0	10 0 0	..	1 0 0	5 12 0	..	
	68 2 0	..	3 8 0	..	14 12 0	33 0 0	51 4 0	40 0 0	..	11 4 0	21 12 0	..	
	43 9 0	..	3 13 0	..	11 13 0	17 4 0	32 14 0	32 8 0	..	0 6 0	16 14 0	..	
	77 13 0	..	2 10 0	..	5 0 0	15 0 0	22 10 0	40 0 0	17 6 0	..	32 6 0	..	
Bannur.	153 11 0	..	25 11 0	..	4 2 0	..	29 13 0	144 8 0	14 11 0	..	114 11 0	..	
	115 8 0	..	16 3 0	..	1 4 0	..	17 7 0	61 4 0	43 13 0	..	43 13 0	..	
	93 6 0	..	14 4 0	..	4 4 0	..	18 8 0	53 3 0	34 11 0	..	34 11 0	..	

(e) JAVA (GLUMED WHEAT)—cont.

APPENDIX II—cont.

ABSTRACT.

	Current rates.			Pre-war rates.							
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.		
1 Average for fields which show a profit when baling charges are <i>included</i> in cultivation expenses.	554	8	0	=	98	5	0	=	46	1	9
	5.64								4.87		
2 Average for fields which show a loss when baling charges are <i>included</i> in cultivation expenses.	217	5	0	=	36	15	11	=	14	3	11
	5.92								6.69		
3 Average for all fields when baling charges are <i>included</i> in cultivation expenses.	337	3	0	=	29	2	10	=	11	2	10
	11.56								11.56		
4 Average for fields which show a profit when baling charges are <i>excluded</i> in cultivation expenses.	719	1	0	=	88	9	0	=	38	10	3
	8.12								7.35		
5 Average for fields which show a loss when baling charges are <i>excluded</i> in cultivation expenses.	200	9	0	=	58	4	10	=	19	10	3
	3.44								4.21		
6 Average for all fields when baling charges are <i>excluded</i> in cultivation expenses.	518	8	0	=	44	13	19	=	17	6	7
	11.56								11.56		

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots, own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
			(1)	(5)	(6)	(7)				(11)	(12)
(1)	(2)	(3)	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	(8)	SEERS.	RS. A. P.	RS. A. P.	
(J) NIR—JOLA.											
Tornagal.	37	2-00	55 9 0		45 14 0	92 0 0	193 7 0	1,080	368 0 0	174 9 0	..
	42 & 42 A.	3-25	183 10 0		91 8 0	93 0 0	368 2 0	2,840	622 0 0	253 14 0	..
	40 A & B.	3-00	177 15 0		56 10 0	123 0 0	357 9 0	3,035	661 0 0	303 7 0	..
	40 C, D & E.	3-50	102 6 0		89 13 0	111 0 0	303 3 0	1,680	372 0 0	68 13 0	..
	44 A	2-19	128 1 0		46 8 0	72 0 0	246 9 0	1,820	412 0 0	165 7 0	..
	37 B	4-00	101 3 0		83 12 0	75 0 0	259 15 0	2,720	601 0 0	341 1 0	..
	53 A	2-50	127 14 0		91 0 0	69 0 0	287 14 0	1,910	418 0 0	130 2 0	..
	230 A & B.	4-00	138 5 0		128 6 0	119 4 0	385 15 0	2,845	629 0 0	243 1 0	..
	42	6-00	274 12 0		42 12 0	80 0 0	307 8 0	6,435	1,371 0 0	973 8 0	..
	244 B	1-49	26 10 0		45 8 0	92 0 0	164 11 0	718	129 3 0	..	35 8 0
	243 B & C.	1-99	43 3 0	49 0 0	110 4 0	56 6 0	258 13 0	1,444½	257 12 0	..	1 1 0
	223	1-50	14 12 0		40 2 0	57 15 0	112 13 0	729	131 8 0	18 11 0	..
	376 A and 218.	1-34	23 3 0	51 0 0	41 0 0	60 6 0	175 9 0	496	89 3 0	..	86 6 0
	262 A & B and 252.	2-05	24 11 0	50 13 0	81 1 0	76 4 0	232 13 0	1,771	314 3 0	81 6 0	..
	263 A & B.	1-84	35 11 0	21 0 0	32 2 0	62 8 0	151 5 0	1,116	199 0 0	47 11 0	..
265, 266 A, 254 and 252.	1-88	22 12 0	46 0 0	52 6 0	49 15 0	171 1 0	797	113 0 0	..	58 1 0	
Genikihal.	221	1-25	23 8 0	51 0 0	90 7 0	101 4 0	266 3 0	695	126 13 0	..	139 6 0
	216 A-2 & B.	1-12	2 13 0	..	35 15 0	51 12 0	90 8 0	444½	80 5 0	..	10 3 0
	257	1-04	23 13 0	18 8 0	53 13 0	43 14 0	140 0 0	367	65 15 0	..	74 1 0
	376 A and 218.	1-12	5 9 0	21 0 0	33 7 0	54 8 0	114 8 0	444½	80 15 0	..	34 3 0
	376 D	0-96	10 5 0	..	46 4 0	58 3 0	114 12 0	388	74 3 0	..	40 9 0
	376 L	1-00	22 15 0	51 0 0	55 10 0	89 4 0	218 13 0	1,043	186 13 0	..	32 0 0
	447 F & G.	1-20	39 14 0	26 0 0	85 9 0	43 14 0	195 5 0	1,625	286 5 0	91 0 0	..
	447 L	0-64	17 7 0	25 0 0	35 0 0	75 12 0	153 3 0	1,016	177 13 0	24 10 0	..
447 M, N, O & P.	0-88	18 3 0	..	31 5 0	46 4 0	95 12 0	797	192 5 0	46 9 0	..	

## APPENDIX II- cont.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		ACS.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	SEERS.	RS. A. P.	RS. A. P.	RS. A. P.
(c) JAVA (GLUMED WHEAT).											
Moka.	1	0.30	10 7 0	..	13 3 0	..	23 10 0	21	4 3 0	..	19 7 0
	2	1.30	73 0 0	..	72 4 0	..	145 4 0	258	51 10 0	..	93 10 0
	5	0.75	37 10 0	..	102 12 0	..	140 6 0	512	102 7 0	..	3 15 0
	6	0.10	2 5 0	..	7 8 0	..	9 13 0	61	12 3 0	2 6 0	..
	10	0.40	5 7 0	..	7 10 0	..	13 1 0	163	32 10 0	19 9 0	..
	17	0.50	16 1 0	..	27 10 0	..	43 11 0	136	27 3 0	..	16 8 0
	22 B	1.00	23 0 0	..	18 7 0	..	41 7 0	321	64 3 0	22 12 0	..
Genikihal.	23	1.00	19 8 0	..	35 10 0	..	55 2 0	648	124 3 0	73 1 0	..
	24 A	0.50	8 15 0	..	19 5 0	..	28 4 0	256	51 3 0	22 15 0	..
	27	0.59	17 6 0	..	40 8 0	..	57 14 0	124	24 13 0	..	33 1 0
	29	0.42	14 13 0	..	12 3 0	..	27 0 0	202	40 7 0	13 7 0	..
	376	0.20	0 3 0	..	10 15 0	15 12 0	26 14 0	120	24 0 0	..	2 14 0
	271 A	0.93	7 6 0	..	20 8 0	81 4 0	109 2 0	480	96 0 0	..	13 2 0
	374	1.35	6 14 0	..	27 9 0	44 5 0	78 12 0	390	78 0 0	..	0 12 0
Bannur.	221	0.22	3 14 0	..	14 5 0	40 0 0	58 3 0	480	96 0 0	37 13 0	..
	355	0.85	42 6 0	..	10 15 0	..	53 5 0	1,080	207 0 0	153 11 0	..
	353	0.85	33 11 0	..	3 5 0	..	37 0 0	456	152 8 0	115 8 0	..
	237	0.50	27 6 0	..	11 9 0	..	38 15 0	396	132 5 0	93 6 0	..



Village.	Current rates—cont.				Pre-war rates.							
	Profit or loss excluding baling charges but allowing labour charges for watering		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.				Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.	Total of columns (15) to (18).	Value of produce in column (9).	Profit.	Loss.	Profit.	Loss.
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	

(c) JAVA (GLUMED WHEAT)—cont.

Moka		19 7 0	4 14 0		5 1 0	9 15 0	1 1 0		8 14 0		8 14 0
		93 10 0	17 8 0		34 8 0	52 0 0	12 15 0		39 1 0		39 1 0
		37 15 0	14 12 0		10 3 0	24 5 0	25 10 0	0 11 0		0 11 0	
		2 6 0	1 7 0		3 1 0	4 8 0	3 1 0		1 7 0		1 7 0
		19 9 0	2 4 0		2 6 0	4 10 0	8 2 0	3 8 0		3 8 0	
		16 8 0	7 2 0		10 8 0	17 10 0	6 13 0		10 13 0		10 13 0
Genkihal.		22 12 0	12 5 0		8 6 0	20 11 0	16 1 0		4 10 0		4 10 0
		73 1 0	10 8 0		12 13 0	23 5 0	32 1 0	8 12 0		8 12 0	
		22 15 0	4 2 0		7 9 0	11 11 0	12 12 0	1 1 0		1 1 0	
		33 1 0	8 13 0		14 10 0	23 7 0	6 3 0		17 4 0		17 4 0
		13 7 0	6 5 0		4 7 0	10 12 0	10 2 0		0 10 0		0 10 0
		12 14 0	0 3 0		4 1 0	11 0 0	10 0 0		1 0 0		5 12 0
Bannur.		68 2 0	3 8 0		14 12 0	33 0 0	51 4 0	40 0 0		11 4 0	21 12 0
		43 9 0	3 13 0		11 13 0	17 4 0	32 14 0	32 8 0	0 6 0	16 14 0	
		77 13 0	2 10 0		5 0 0	15 0 0	22 10 0	40 0 0	17 6 0		32 8 0
		153 11 6	25 11 0		4 2 0	4 2 0	29 13 0	144 8 0	14 11 0		114 11 0
Bannur.		115 8 0	16 3 0		1 4 0		17 7 0	61 4 0	43 13 0		43 13 0
		93 6 0	14 4 0		4 4 0		18 8 0	53 3 0	34 11 0		34 11 0

APPENDIX II—cont.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure		Value of ryots, own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
			(4)	(5)	(6)	(7)				(8)	(9)
(1)	(2)	(3)	RS. A. P.	RS. A. P.	RS. A. P.	RS. . P.	RS. A. P.	SEERPS.	RS. A. P.	RS. A. P.	RS. A. P.
(f) NIR JOLA—cont.											
Genkihal- cont.	271 A	0.93	15 14 0	..	24 1 0	83 12 0	123 11 0	634	115 10 0	..	8 1 0
	374	1.75	22 11 0	..	74 9 0	55 14 0	153 2 0	444	81 12 0	..	71 6 0
	381 B	1.74	112 9 0	51 0 0	3 10 0	154 5 0	321 8 0	1,552	278 11 0	..	42 13 0
	381 C	2.00	31 10 0	23 8 0	99 4 0	144 12 0	299 2 0	1,865	336 13 0	37 11 0	..
	387 A	0.88	15 1 0	..	74 8 0	101 4 0	190 13 0	1,531	268 3 0	77 6 0	..
	387 B	1.12	55 6 0	50 0 0	50 4 0	162 8 0	318 2 0	2,002	359 11 0	41 9 0	..
	386 D and 385 D.	1.45	28 0 0	..	87 12 0	98 14 0	214 10 0	1,371	248 8 0	33 14 0	..
	386 B and 383 B.	2.32	34 13 0	51 0 0	78 0 0	146 10 0	310 7 0	2,340	422 0 0	111 9 0	..
	383 E, 385 A and 380 A.	1.38	28 12 0	..	52 6 0	74 4 0	155 6 0	650	124 5 0	..	31 1 0
	383 B	1.62	46 11 0	31 0 0	103 14 0	81 0 0	262 9 0	1,343	243 13 0	..	18 12 0
	356	1.47	78 9 0	59 0 0	44 3 0	80 13 0	262 9 0	2,089	374 3 0	111 10 0	..
	355	1.20	6 4 0	23 12 0	67 14 0	109 12 0	207 10 0	1,292	220 0 0	12 6 0	..
	384	0.77	4 1 0	51 0 0	22 15 0	32 12 0	110 12 0	641	116 5 0	5 9 0	..
	388 A	1.56	19 9 0	51 0 0	51 2 0	87 8 0	209 3 0	1,531	275 3 0	66 0 0	..
	379 C	2.16	52 1 0	32 0 0	131 12 0	110 0 0	325 13 0	2,770	495 11 0	169 14 0	..

C	Village.	Current rates—cont.				Pre-war rates.																												
		Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure		Value of ryots' own labour, manure, cattle, etc.		Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.																								
		Profit.	Loss.	On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.	Total of columns (15) to (18).	Value of produce in column (9).	Profit.	Loss.	Profit.	Loss.																					
		(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)																					
RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.																						
(f) NIR-JOLA—cont.																																		
Tornagal.	266	0	0	..	26	10	0	..	18	1	0	45	0	0	89	11	0	115	12	0	26	1	0	..	71	1	0	..						
	346	14	0	..	96	14	0	..	43	7	0	50	15	0	190	4	0	195	8	0	5	4	0	..	56	3	0	..						
	426	7	0	..	83	6	0	..	27	5	0	51	3	0	161	14	0	207	11	0	45	13	0	..	97	0	0	..						
	189	13	0	..	48	3	0	..	31	3	0	49	3	0	128	9	0	117	0	0	..	..	..	11	9	0	..	37	10	0	..			
	237	7	0	..	59	7	0	..	27	7	0	23	10	0	110	8	0	129	12	0	19	4	0	..	42	14	0	..	..	..	..	..		
	416	1	0	..	51	9	0	..	40	11	0	27	5	0	119	9	0	189	0	0	69	7	0	..	96	12	0	..	..	..	..	..		
	109	2	0	..	64	1	0	..	33	5	0	23	15	0	121	5	0	131	6	0	10	1	0	..	34	0	0	..	..	..	..	..		
	362	5	0	..	72	12	0	..	56	8	0	58	1	0	187	5	0	197	13	0	10	8	0	..	68	9	0	..	..	..	..	..		
	1053	8	0	..	129	14	0	..	23	7	0	40	3	0	193	8	0	430	3	0	236	11	0	..	276	14	0	..	..	..	..	..		
	57	1	0	..	9	4	0	..	22	10	0	51	1	0	82	15	0	53	2	0	..	..	..	20	13	0	..	21	4	0	..	..		
	104	5	0	..	11	0	0	..	36	2	0	57	1	0	118	10	0	100	12	0	..	..	..	17	14	0	..	53	10	0	..	..		
	76	10	0	..	7	4	0	..	15	4	0	53	12	0	76	4	0	52	12	0	..	..	..	23	8	0	..	29	4	0	..	..		
	25	0	0	..	5	12	0	..	26	6	0	25	10	0	72	3	0	35	9	0	..	..	..	36	10	0	..	3	7	0	..	..		
	208	7	0	..	11	12	0	..	36	6	0	44	10	0	103	4	0	122	10	0	19	6	0	..	74	8	0	..	..	..	..	..		
	131	3	0	..	8	9	0	..	21	6	0	47	8	0	88	11	0	78	4	0	..	..	..	10	7	0	..	48	5	0	..	..		
	37	14	0	..	9	7	0	..	22	4	0	53	9	0	96	8	0	45	2	0	..	..	..	51	6	0	..	13	7	0	..	..		
	12	14	0	..	10	1	0	..	38	9	0	61	0	0	119	14	0	52	11	0	..	..	..	67	3	0	..	4	1	0	..	..		
41	9	0	..	1	8	0	..	13	11	0	24	8	0	39	11	0	41	4	0	1	9	0	..	26	1	0	..	..	..	..	..			
Genkihal.	..	..	..	11	11	0	..	21	15	0	23	2	0	58	3	0	26	7	0	..	..	..	31	12	0	..	..	..	..	4	2	0	..	
	41	5	0	..	2	7	0	..	12	8	0	32	0	0	51	15	0	32	12	0	..	..	..	19	3	0	..	17	13	0	..	..		
	17	10	0	..	4	12	0	..	17	1	0	44	12	0	66	9	0	33	11	0	..	..	..	32	14	0	..	11	14	0	..	..		
	108	4	0	..	6	0	0	..	27	3	0	48	13	0	94	6	0	74	3	0	..	..	..	20	3	0	..	41	0	0	..	..		
	160	14	0	..	16	0	0	..	37	14	0	52	12	0	115	8	0	108	12	0	..	..	..	6	12	0	..	54	14	0	..	..		
	125	6	0	..	3	11	0	..	15	1	0	37	8	0	63	8	0	66	11	0	3	3	0	..	47	15	0	..	..	..	..	..		
	92	13	0	..	10	6	0	..	12	0	0	22	10	0	45	0	0	56	6	0	11	6	0	..	34	0	0	..	..	..	..	..		
	75	11	0	..	4	7	0	..	19	3	0	34	15	0	58	9	0	47	7	0	..	..	..	11	2	0	..	23	13	0	..	..		
	162	8	0	..	10	6	0	..	27	9	0	43	1	0	81	0	0	34	12	0	..	..	..	46	4	0	..	..	..	..	3	3	0	..
	205	15	0	..	8	6	0	..	46	1	0	20	13	0	126	9	0	110	12	0	..	..	..	15	13	0	..	72	9	0	..	..		
	178	10	0	..	15	9	0	..	3	13	0	49	6	0	148	4	0	136	2	0	..	..	..	12	12	0	..	71	3	0	..	..		
254	1	0	..	7	6	0	..	29	7	0	61	13	0	98	10	0	101	5	0	2	11	0	..	64	8	0	..	..	..	..	..			
..	..	..	..	18	9	0	..	12	8	0	18	9	0	94	12	0	143	12	0	..	..	..	0	10	0	..	106	10	0	..	..			

APPENDIX II—cont.

Village.	Current rates—cont.		Pre-war rates.									
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure		Value of ryots' own labour, manure, cattle, etc.		Total of columns (15) to (18).	Value of produce in column (9).	Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.			Profit.	Loss.	Profit.	Loss.
							(13)	(14)				
RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.

(f) NIR-JOLA—cont.

Genikihal —cont.	132 12 0	..	12 10 0	..	34 10 0	58 4 0	105 8 0	100 11 0	..	4 13 0	53 7 0	..
	309 3 0	..	25 3 0	10 10 0	27 5 0	69 2 0	132 4 0	170 8 0	38 4 0	..	118 0 0	..
	43 3 0	..	10 3 0	..	26 12 0	34 0 0	70 15 0	56 10 0	..	14 5 0	19 11 0	..
	93 4 0	..	15 4 0	8 2 0	36 12 0	43 12 0	103 14 0	109 2 0	5 4 0	..	57 2 0	..
	251 7 0	..	26 10 0	17 9 0	24 3 0	53 7 0	121 13 0	148 9 0	26 12 0	..	97 12 0	..
	145 14 0	..	3 15 0	5 0 0	22 7 0	79 15 0	111 5 0	85 8 0	..	25 13 0	59 2 0	..
	89 5 0	..	1 10 0	10 0 0	10 0 0	16 7 0	38 1 0	47 12 0	9 11 0	..	36 2 0	..
204 8 0	..	9 4 0	10 0 0	16 5 0	53 8 0	89 1 0	109 9 0	20 8 0	..	84 0 0	..	
311 14 0	..	21 13 0	8 0 0	52 11 0	79 7 0	161 15 0	194 14 0	32 15 0	..	120 6 0	..	

ABSTRACT.

	Current rates.		Pre-war rates.	
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Average for fields which show a profit when baling charges are included in cultivation expenses.	3,631 5 0	= 67 15 0	594 10 0	= 14 1 0
2 Average for fields which show a loss when baling charges are included in cultivation expenses.	53-47	= 33 3 0	42-30	= 15 7 0
3 Average for all fields when baling charges are included in cultivation expenses.	2,947 14 0	= 39 13 0	31-78	= 1 6 0
4 Average for fields which show a profit when baling charges are excluded in cultivation expenses.	74-08	= 100 13 0	74-08	= 31 8 0
5 Average for fields which show a loss when baling charges are excluded in cultivation expenses.	7,187 8 0	= 9 12 0	2,247 11 0	= 2 10 0
6 Average for all fields when baling charges are excluded in cultivation expenses.	71-29	= 96 11 0	71-29	= 30 4 0
	27 3 0		7 5 0	
	2-79		2-77	
	7,160 5 0		2,240 6 0	
	74 08		74-08	

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots, own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		ACS.		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.	
(g) DRY CHOLAM—BAGAVADI FARM.											
								LB.			
Bagavadi Farm.	283 and 282.	1 00	..	..	9 0 0	..	9 0 0	242	23 5 0	14 5 0	..
	284 A	1 00	..	..	8 8 0	..	8 8 0	435	45 1 0	36 9 0	..
	285 B	1 00	..	..	12 13 0	..	12 13 0	1,333	127 11 0	114 14 0	..
	287 A	1 00	..	..	11 15 0	..	11 15 0	533	49 5 0	37 6 0	..
	289 B and 286 B.	1 00	..	..	9 10 0	..	9 10 0	385	33 14 0	24 4 0	..

APPENDIX II—cont.

Village.	Current rates—cont.		Pre-war rates.									
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (15) to (18).	Value of produce in column (9).	Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.			Profit.	Loss.	Profit.	Loss.
							(13)	(14)				
	RS. A. P.											

(g) DRY CHOLAM—cont.

Bagavadi Farm.	14	5	0	..	..	..	..	..	..	..	..	..	..
	36	9	0	..	..	..	..	..	..	..	..	..	..
	114	14	0	..	..	..	..	..	..	..	..	..	..
	37	6	0	..	..	..	..	..	..	..	..	..	..
	24	4	0	..	..	..	..	..	..	..	..	..	..

ABSTRACT.

Bagavadi Farm. No cases of loss.

	Current rates.		Pre-war rates.	
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
Average profit for all fields	227	6 0	21	4 1*
	5 acres		5	
	= 45 7 7		= 4 4 0	

\* The pre-war figures were not actually worked out by the Farm Manager, but have been worked out in my office on the basis of pre-war prices of cholam and cultivation expenses reduced in the same proportion as for dry korra studied by my staff.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) and (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
			(4)	(5)	(6)	(7)				(11)	(12)
(1)	(2)	(3)	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	SEERS.	RS. A. P.	RS. A. P.	
(b) KORRA IRRIGATED.											
Porangal.	40 U, D A E.	3-00	9 15 0	..	21 4 0	31 0 0	150 3 0	1,500	290 0 0	130 13 0	..
Bagavadi Farm.	{ 297 B 285 A	1-00	..	..	13 14 0	..	13 14 0	LB. 577	70 13 0	56 15 0	..
		1-00	..	..	16 0 0	..	16 0 0	292	22 10 0	6 10 0	..

APPENDIX II -cont.

Village.	Current rates—cont.		Pre-war rates.									
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (15) to (18).	Value of produce in column (9).	Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R. (15)	On baling. (16)	On operations other than baling. (17)	On baling. (18)			Profit.	Loss.	Profit.	Loss.
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	RS. A. P.		RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.	
Torangal.	178 13 0	..	44 12 0	..	9 1 0	12 0 0	65 13 0	96 10 0	30 13 0	..	42 13 0	..
Bagavadi	{ 56 15 0	..	..	..	..	..	..	..	..	..	..	..
Farm.	{ 6 10 0	..	..	..	..	..	..	..	..	..	..	..

(b) KORRA IRRIGATED—cont.

ABSTRACT.

No cases of loss.

	Current rates.		Pre-war rates.	
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Average profit when baling charges are <i>included</i> in cultivation expenses ..	203 6 0	= 40 10 0	30 13 0	= 10 4 0
	5-00		3-00	
2 Average profit when baling charges are <i>excluded</i> in cultivation expenses ..	242 6 0	= 48 7 7	42 13 0	= 14 4 0
	5-00		3-00	



Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
			(4)	(5)	(6)	(7)				(8)	(9)
(1)	(2)	(3)	RS. A. P.		RS. A. P.		RS. A. P.	SEERS.	RS. A. P.	RS. A. P.	RS. A. P.
(j) KORRA DRY FIELDS.											
Torangal.	47 B	6-00	38 12 0	..	59 5 0	..	98 1 0	1,010	216 0 0	117 15 0	..
	303	6-10	21 11 0	..	56 7 0	..	78 2 0	925	202 3 0	124 1 0	..
Genkihal.	373 A, B & C.	3-17	16 13 0	..	62 3 0	..	79 0 0	375	81 0 0	2 0 0	..
	323 and 281.	2-85	..	..	89 14 0	..	89 14 0	56	132 0 0	42 2 0	..
	357 B	2-39	..	..	81 9 0	..	81 9 0	648	98 0 0	11 7 0	..
	350	2-11	..	..	34 12 0	..	34 12 0	444	65 4 0	30 8 0	..
	237	1-50	..	..	19 8 0	..	19 8 0	576	84 0 0	64 8 0	..
	329 and 330.	5-40	..	..	129 7 0	..	129 7 0	720	110 0 0	..	19 7 0
	352	1-98	..	..	30 15 0	..	30 15 0	216	35 0 0	4 1 0	..
	367	1-75	..	..	22 12 0	..	22 12 0	266	26 8 0	3 12 0	..
Bannur	348-1	1-24	..	..	45 4 0	..	45 4 0	216	31 0 0	..	14 4 0
	244 and 249 B-2.	1-76	..	..	19 7 0	..	19 7 0	216	34 0 0	14 9 0	..
	343-2	1-97	..	..	26 6 0	..	26 6 0	108	16 8 0	..	9 14 0
	308-1	1-20	..	..	29 15 0	..	29 15 0	153	23 0 0	..	6 15 0
	351	1-04	..	..	42 10 0	..	42 10 0	432	40 0 0	..	2 10 0
	351	0-54	..	..	22 3 0	..	22 3 0	324	31 0 0	8 13 0	..
	243-1 A	1-79	..	..	35 8 0	..	35 8 0	444	43 8 0	6 0 0	..
	238	4-52	..	..	53 1 0	..	53 1 0	612	102 0 0	48 15 0	..
	346-2	0-93	..	..	21 12 0	..	21 12 0	238	25 0 0	3 4 0	..
	241	1-51	..	..	88 10 0	..	88 10 0	432	40 0 0	..	48 10 0
	229	1-67	..	..	34 0 0	..	34 0 0	738	60 0 0	26 0 0	..
	235-2	1-50	..	..	28 14 0	..	28 14 0	252	26 8 0	..	2 6 0
Bagavadi.	285 B	1-00	..	..	10 5 0	..	10 5 0	LB. 352	28 6 0	18 1 0	..

## APPENDIX II—cont.

Village.	Current rates—cont.		Pre-war rates.									
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.			
	Profit.	Loss.	On operations other than baling including J.R.	On baling.	On operations other than baling.	On baling.	Total of columns (15) to (18).	Value of produce in column (9).	Profit.	Loss.	Profit.	Loss.
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	
(j) KORRA DRY FIELDS—cont.												
Torangal.	117 15 0	..	22 2 0	..	36 8 0	..	58 10 0	72 2 0	13 8 0	..	13 8 0	..
	124 1 0	..	13 14 0	..	32 6 0	..	46 4 0	67 6 0	21 2 0	..	21 2 0	..
Genikihal.	2 0 0	..	8 9 0	..	31 5 0	..	39 14 0	18 0 0	..	21 14 0	..	21 14 0
	42 2 0	..	..	..	34 6 0	..	34 6 0	60 0 0	25 10 0	..	25 10 0	..
	11 7 0	..	..	..	28 15 0	..	28 15 0	60 0 0	31 1 0	..	31 1 0	..
	30 8 0	..	..	..	15 10 0	..	15 10 0	42 0 0	26 6 0	..	26 6 0	..
	64 8 0	..	..	..	6 13 0	..	6 13 0	54 0 0	47 3 0	..	47 3 0	..
	..	19 7 0	..	..	58 4 0	..	58 4 0	70 0 0	11 12 0	..	11 12 0	..
	4 1 0	..	..	..	12 12 0	..	12 12 0	22 0 0	9 4 0	..	9 4 0	..
	3 12 0	..	..	..	10 1 0	..	10 1 0	17 0 0	6 15 0	..	6 15 0	..
	14 9 0	..	..	..	18 2 0	..	18 2 0	18 0 0	..	0 2 0	..	0 2 0
Bannur	..	9 14 0	..	..	7 7 0	..	7 7 0	18 10 0	11 3 0	..	11 3 0	..
	..	6 15 0	..	..	10 15 0	..	10 15 0	9 0 0	..	1 15 0	..	1 15 0
	..	2 10 0	..	..	11 15 0	..	11 15 0	12 12 0	0 13 0	..	0 13 0	..
	8 13 0	..	..	..	17 13 0	..	17 13 0	26 0 0	8 3 0	..	8 3 0	..
	8 0 0	..	..	..	14 1 0	..	14 1 0	20 0 0	5 15 0	..	5 15 0	..
	48 15 0	..	..	..	11 6 0	..	11 6 0	19 12 0	8 6 0	..	8 6 0	..
	3 4 0	..	..	..	21 7 0	..	21 7 0	46 0 0	24 9 0	..	24 9 0	..
	..	48 10 0	..	..	10 4 0	..	10 4 0	11 4 0	1 0 0	..	1 0 0	..
	26 0 0	..	..	..	37 9 0	..	37 9 0	26 0 0	..	11 9 0	..	11 9 0
	..	2 6 0	..	..	15 4 0	..	15 4 0	39 0 0	23 12 0	..	23 12 0	..
Bagavadi.	18 1 0	..	..	..	15 4 0	..	15 4 0	17 0 0	1 12 0	..	1 12 0	..
	..	..	..	..	7 14 0	..	7 14 0	9 7 4	1 9 4	..	1 9 4	..

				ABSTRACT.														
				Current rates.			Pre-war rates.											
				RS.	A.	P.	RS.	A.	P.	RS.	A.	P.						
1	Average profit per acre on fields which show a profit	..	..	..	527	0	0	=	13	2	5	279	15	4	=	6	1	0
				40.06						46.21								
2	Average loss per acre on fields which show a loss	..	..	..	104	2	0	=	7	6	0	35	8	0	=	4	8	0
				14.04						7.39								
3	Average profit for all fields	..	..	..	422	14	0	=	7	13	0	244	7	4	=	4	8	0
				54.10						54.10								

APPENDIX II—con.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
			(4)	(5)	(6)	(7)				(11)	(12)
(1)	(2)	(3)	RS. A. P.		RS. A. P.		RS. A. P.	TONS.	RS. A. P.	RS. A. P.	RS. A. P.
(j-2) SAL PADDY.											
Jutur	598-2 and 60-4.	1-84	10 14 0	..	24 8 0	..	35 6 0	4	43 0 0	7 10 0	..
	600 B-3	1-69	6 15 0	..	73 4 0	..	80 3 0	4-4	40 12 0	..	39 7 0
	578-3	1-03	13 13 9	..	25 4 0	..	39 1 9	3	31 4 0	..	7 13 9
	578-2	1-03	11 13 0	..	28 4 0	..	40 1 0	2	20 8 0	..	19 11 0
	598-1	1-88	11 0 0	..	66 12 0	..	77 12 0	8	86 0 0	8 4 0	..

Village.	Current rates—cont.				Pre-war rates.							
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (15) to (18).	Value of produce in column (9).	Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R. (15)	On baling. (16)	On operations other than baling. (17)	On baling. (18)			Profit.	Loss.	Profit.	Loss.
							(13)	(14)				
RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	

(j-2) SAL PADDY—cont.

Jutur	7 10 0	..	6 9 0	..	11 7 0	..	18 0 0	23 0 0	5 0 0	..	5 0 0	..
	..	39 7 0	5 6 0	..	26 4 0	..	31 10 0	23 0 0	..	3 10 0	..	8 10 0
	..	7 13 9	8 8 6	..	11 4 0	..	19 12 6	17 8 0	..	2 4 6	..	2 4 6
	..	19 11 0	4 3 0	..	12 2 0	..	16 5 0	11 8 0	..	4 13 0	..	4 13 0
	8 4 0	..	6 15 0	..	23 3 0	..	30 2 0	48 0 0	17 14 0	..	17 14 0	..

ABSTRACT.

No cases of baling.

	Current rates.		Pre-war rates.	
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Profit per acre on fields which show a profit .. .. .	15 12 0		22 14 0	
	3-72	= 4 3 9	3-72	= 6 2 5
2 Loss per acre on fields which show a loss .. .. .	66 15 9		15 11 6	
	3-75	= 17 13 10	3-75	= 4 3 0
3 Average loss for all fields .. .. .	51 3 9		7 2 6	
	7-47	= 6 13 8	7-47	= 0 15 2

APPENDIX II—cont.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
			(4)	(5)	(6)	(7)				(8)	(9)
			RS. A. P.		RS. A. P.		MAUNDS.	RS. A. P.		RS. A. P.	
(k) IRRIGATED GROUNDNUT.											
Jutur	598-3	1-90	..	..	56 8 0	..	56 8 0	50	143 8 0	87 0 0	..
	600 A-2.	1-60	..	..	40 5 0	..	40 5 0	40	118 0 0	77 11 0	..
	591 A & B.	5-12	..	..	87 0 0	..	87 0 0	182	452 4 0	365 4 0	..

Current rates—cont.

Pre-war rates.

Village.	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (15) to (18).	Value of produce in column (9).	Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.			Profit.	Loss.	Profit.	Loss.
	(13)	(14)	(15)	(16)	(17)	(18)			(19)	(20)	(21)	(22)
			RS. A. P.		RS. A. P.		RS. A. P.	RS. A. P.	RS. A. P.		RS. A. P.	
(k) IRRIGATED GROUNDNUT—cont.												
Jutur	87 0 0	..	..	..	28 13 0	..	28 13 0	53 0 0	24 3 0	..	24 3 0	..
	77 11 0	..	..	..	20 11 0	..	20 11 0	44 0 0	23 5 0	..	23 5 0	..
	365 4 0	..	..	..	49 0 0	..	49 0 0	192 0 0	143 0 0	..	143 0 0	..

ABSTRACT.

No cases of baling and no cases of loss.

Average profit per acre	Current rates.		=	Pre-war rates.	
	RS. A. P.	RS. A. P.		RS. A. P.	RS. A. P.
	..	529 15 0		61 8 0	190 8 2

Current rates.

Village.	Survey number.	Extent.	Cash expenditure		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
			(4)	(5)	(6)	(7)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		ACS.			RS. A. P.		RS. A. P.	MAUNDS.	RS. A. P.	RS. A. P.	

(i) GROUNDNUT (UNIRRIGATED).

												MAUNDS.
	331	5-20	..	..	350 11 0	..	350 11 0	235	670 4 0	319 9 0	..	
	269-2	2-00	..	..	87 14 0	..	87 14 0	62½	177 14 0	90 0 0	..	
	274	7-44	..	..	290 1 0	..	290 1 0	262½	721 14 0	431 13 0	..	
	268 B-2	1-26	..	..	55 15 0	..	55 15 0	38	104 8 0	48 9 0	..	
	240	2-83	..	..	87 8 0	..	87 8 0	137½	306 13 0	219 5 0	..	
	380 and 324.	2-83	..	..	89 11 0	..	89 11 0	108	282 3 0	192 8 0	..	
	232, 234, 265, 266 and 237.	8-54	..	..	569 4 0	..	569 4 0	736	2,138 10 0	1,569 6 0	..	
	268 C-2	2-80	..	..	78 5 0	..	78 5 0	100½	300 6 0	222 1 0	..	
	325 and 279.	2-90	..	..	111 3 0	..	111 3 0	137½	309 6 0	298 3 4	..	
	275	4-84	..	..	112 4 0	..	112 4 0	94	258 8 0	148 4 0	..	
	236 A & B.	1-76	..	..	125 11 0	..	125 11 0	61	160 2 0	34 7 0	..	
	268 A-1	1-77	..	..	88 15 0	..	88 15 0	71	206 4 0	117 5 0	..	
	243-1, 2 B and 245-2.	2-68	..	..	78 4 0	..	78 4 0	60	156 0 0	77 12 0	..	
	275	4-84	..	..	140 6 0	..	140 6 0	144	402 0 0	261 10 0	..	
	351	1-04	..	..	36 6 0	..	36 6 0	25	62 13 0	26 7 0	..	
	351	0-54	..	..	27 10 0	..	27 10 0	31	79 3 0	42 9 0	..	
	268 A-2, C-1 and B-1.	8-69	..	..	393 10 0	..	393 10 0	529	1,526 12 0	1,133 2 0	..	
	365	2-08	..	..	86 13 0	..	86 13 0	70	171 8 0	26 8 0	..	
	364	2-00	..	..	86 13 0	..	86 13 0	91	253 14 0	167 1 0	..	
	328	1-96	..	..	51 2 0	..	51 2 0	25	57 13 0	6 11 0	..	
	114-2 and 114-3	1-18	..	..	59 6 0	..	59 6 0	67½	185 11 0	120 5 0	..	

## APPENDIX II—cont.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R. (4)	On baling. (5)	On operations other than baling. (6)	On baling. (7)				Profit.	Loss.
(1)	(2)	(3)	RS. A. P.		RS. A. P.		RS. A. P.	MAUNDS.	RS. A. P.	RS. A. P.	(12)
(i) GROUNDNUT (UNIRRIGATED)—cont.											
Jutur	60 A & B-2.	1.65	..	..	41 14 0	..	41 14 0	28½	75 0 0	33 2 0	..
	598-4	1.77	..	..	51 9 0	..	51 9 0	47	114 11 0	63 2 0	..
	579 and 549 A & B.	3.64	..	..	142 0 0	..	142 0 0	88½	217 10 0	75 10 0	..
	554 A-5 and 555 A-2.	1.06	..	..	40 13 0	..	40 13 0	21½	54 2 0	13 5 0	..
	549 A-2.	1.45	..	..	53 8 0	..	53 8 0	25	71 12 0	18 4 0	..



Village.	Current rates— <i>cont.</i>		Pre-war rates.																						
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.			Profit or loss.			Profit or loss excluding baling charges but allowing labour charges for watering.														
	Profit.	Loss.	On operations other than baling including L.R.		On operations other than baling.			Total of columns (15) to (18).	Value of produce in column (9).		Profit.	Loss.	Profit.	Loss.											
			(13)	(14)	(15)	(16)	(17)		(18)	(19)					(20)	(21)	(22)	(23)	(24)						
RS. A. P.			RS. A. P.			RS. A. P.		RS. A. P.		RS. A. P.			RS. A. P.												
<b>(D) GROUNDNUT (UNIRRIGATED)—<i>cont.</i></b>																									
Bannur— <i>cont.</i>	319	9	0	..	..	..	..	140	4	0	..	140	4	0	251	0	0	110	12	0	..	110	12	0	..
	90	0	0	..	..	..	..	39	10	0	..	39	10	0	62	8	0	22	14	0	..	22	14	0	..
	431	13	0	..	..	..	..	135	1	0	..	135	1	0	202	8	0	127	7	0	..	127	7	0	..
	48	9	0	..	..	..	..	24	15	0	..	24	15	0	38	0	0	13	1	0	..	13	1	0	..
	219	5	0	..	..	..	..	41	4	0	..	41	4	0	149	8	0	99	9	0	..	99	9	0	..
	192	8	0	..	..	..	..	38	12	0	..	38	12	0	110	0	0	73	4	0	..	73	4	0	..
	1,569	6	0	..	..	..	..	270	0	0	..	270	0	0	814	0	0	540	0	0	..	540	0	0	..
	222	1	0	..	..	..	..	37	1	0	..	37	1	0	112	8	0	75	7	0	..	75	7	0	..
	298	3	0	..	..	..	..	55	1	0	..	55	1	0	137	8	0	82	7	0	..	82	7	0	..
	146	4	0	..	..	..	..	53	1	0	..	53	1	0	94	0	0	40	15	0	..	40	15	0	..
	34	7	0	..	..	..	..	57	0	0	..	57	0	0	61	0	0	4	0	0	..	4	0	0	..
	117	5	0	..	..	..	..	41	3	0	..	41	3	0	75	0	0	33	13	0	..	33	13	0	..
	77	12	0	..	..	..	..	35	7	0	..	35	7	0	63	0	0	27	9	0	..	27	9	0	..
	261	10	0	..	..	..	..	64	6	0	..	64	6	0	156	0	0	94	10	0	..	94	10	0	..
	26	7	0	..	..	..	..	14	5	0	..	14	5	0	27	0	0	12	11	0	..	12	11	0	..
42	9	0	..	..	..	..	17	10	0	..	17	10	0	33	0	0	15	6	0	..	15	6	0	..	
1,133	2	0	..	..	..	..	169	14	0	..	169	14	0	565	0	0	395	2	0	..	395	2	0	..	
26	8	0	..	..	..	..	56	13	0	..	56	13	0	74	0	0	17	3	0	..	17	3	0	..	
167	1	0	..	..	..	..	35	2	0	..	35	2	0	98	0	0	62	14	0	..	62	14	0	..	
6	11	0	..	..	..	..	26	11	0	..	26	11	0	25	0	0	..	..	..	1 10	0	..	..	1 10	0
126	5	0	..	..	..	..	27	7	0	..	27	7	0	67	8	0	40	1	0	..	40	1	0	..	
33	2	0	..	..	..	..	21	8	0	..	21	8	0	33	0	0	118	0	0	..	118	0	0	..	
63	2	0	..	..	..	..	22	13	0	..	22	13	0	51	0	0	28	3	0	..	28	3	0	..	
75	10	0	..	..	..	..	62	14	0	..	62	14	0	90	10	0	27	12	0	..	27	12	0	..	
13	5	0	..	..	..	..	18	15	0	..	18	15	0	24	4	0	5	5	0	..	5	5	0	..	
18	4	0	..	..	..	..	29	1	0	..	29	1	0	27	0	0	..	..	..	2 1	0	..	..	2 1	0

## APPENDIX II--cont.

## (b) GROUNDNUT (UNIRRIGATED)--cont.

## ABSTRACT.

No cases of loss.

	Current rates.			Pre-war rates.		
	RS.	A.	P.	RS.	A.	P.
Average profit per acre .. .. .	5,550	14	0	1,965	8	0
	<hr/>			<hr/>		
	39-06		= 02	85-34		= 23
			5 0			0 5

No cases of baling.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.
			(4)	(5)	(6)	(7)				(11)	(12)
(1)	(2)	(3)					(8)	(9)	(10)		(12)
		ACS.			RS. A. P.		RS. A. P.	LB.	RS. A. P.	RS. A. P.	
(m) COTTON (IRRIGATED).											
Bagavadi.	298 A and 299 A.	1-00	..	..	10 11 0	..	10 11 0	446	71 11 0	61 0 0	..
	182	1-00	..	..	59 10 0	..	59 10 0	475	76 5 0	16 11 0	..
	182	1-00	..	..	12 1 0	..	12 1 0	350	56 4 0	44 3 0	..
	311	1-00	..	..	10 7 0	..	10 7 0	387	62 3 0	51 12 0	..

APPENDIX II—*cont.*

Village.	Current rates— <i>cont.</i>		Pre-war rates.									
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (15) to (18).	Value of produce in column (9).	Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R.	On baling.	On operations other than baling.				Profit.	Loss.	Profit.	Loss.
					On baling.	On baling.						
(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	
	RS. A. P.											

(m) COTTON (IRRIGATED)—*cont.*

Bagavadi — <i>cont.</i>	61	0	0	..	..	..	..	..	..	..	..	..
	16	11	0	..	..	..	..	..	..	..	..	..
	44	3	0	..	..	..	..	..	..	..	..	..
	51	12	0	..	..	..	..	..	..	..	..	..

## ABSTRACT.

No baling charges and no cases of loss.

	Current rates.		Pre-war rates.	
	RS.	A. P.	RS.	A. P.
Average profit for all fields	173	10 0	43	6 6
	4'00			

The figure relate to Cambodia grown on a few acre in Bagavadi ryots form, pre-war figures have not been worked out.

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) to (7).	Quantity of produce.	Value of produce.	Profit or loss.	
			On operations other than baling including L.R. (4)	On baling. (5)	On operations other than baling. (6)	On baling. (7)				Profit. (11)	Loss. (12)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		ACS.	RS. A. P.		RS. A. P.		RS. A. P.	MAUNDS.	RS. A. P.	RS. A. P.	RS. A. P.
(A-1) DAROJI COTTON DRY.											
Daroji	993 and 66.	2.00	98 5 0		17 1 0		113 6 9	10	50 0 0	..	63 6 0
		2.09	78 14 0		15 0 0		93 14 0	10	32 8 0	..	41 0 0
		4.09	155 5 0		53 15 0		209 4 0	424	212 8 0	3 4 0	..
		1.00	38 3 0		3 12 0		41 13 0	6	30 0 0	..	11 13 0
		1.00	24 14 0		3 0 0		36 14 0	6	30 0 0	..	6 14 0

APPENDIX II—cont.

Village.	Current rates—cont.		Pre-war rates.									
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (15) to (18).	Value of produce in column (9).	Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R. (15)	On baling. (16)	On operations other than baling. (17)	On baling. (18)			Profit.	Loss.	Profit.	Loss.
							RS. A. P.	RS. A. P.				

(n-1) DAROJI COTTON DRY—cont.

Daroji.	..	63 6 0	57 12 0	..	4 1 0	..	61 13 0	22 7 0	..	39 5 0	..	39 5 0
	..	41 6 0	42 6 0	..	6 13 0	..	49 3 0	23 12 0	..	25 7 0	..	25 7 0
	3 4 0	..	84 5 0	..	22 13 0	..	107 2 0	95 12 0	..	11 6 0	..	11 6 0
	..	11 13 0	20 13 0	..	1 15 0	..	22 12 0	13 8 0	..	9 4 0	..	9 4 0
	..	6 14 0	15 14 0	..	3 9 0	..	19 7 0	13 8 0	..	5 15 0	..	5 15 0

ABSTRACT.

	Current rates.		Pre-war rates.	
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
1 Average profit on fields which show a profit .. .. .	3 4 0	= 0 13 0		
2 Average loss per acre on fields which show a loss .. .. .	123 7 0	= 19 15 0	91 5 0	= 8 15 0
3 Average loss for all fields which show loss .. .. .	120 3 0	= 11 12 0	10 21	

Current rates.

Village.	Survey number.	Extent.	Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (4) and (7).	Quantity of produce.	Value of produce.	Profit or loss.							
			On operations other than haling including L.R.	On baling.	On operations other than baling.	On baling.				Profit.	Loss.						
												(4)	(5)	(6)	(7)	(8)	(9)
(1)	(2)	(3)	RS.	A.	P.	RS.	A.	P.	L.B.	RS.	A.	P.					
(p.2) COTTON DRY—BAGAVADI FARM.																	
Bagavadi.	{ 182 301 E	1-00	..	..	12	1	0	..	12	1	0	36	15	0	..		
		1-00	..	..	6	7	0	..	6	7	0	108	29	1	0	22	10

## APPENDIX II—cont.

Village.	Current rates—cont.		Pre-war rates.									
	Profit or loss excluding baling charges but allowing labour charges for watering.		Cash expenditure.		Value of ryots' own labour, manure, cattle, etc.		Total of columns (15) to (18).	Value of produce in column (9).	Profit or loss.		Profit or loss excluding baling charges but allowing labour charges for watering.	
	Profit.	Loss.	On operations other than baling including L.R. (15)	On baling. (16)	On operations other than baling. (17)	On baling. (18)			Profit.	Loss.	Profit.	Loss.
	(13)	(14)					(21)	(22)				
	RS. A. P.											

## (n-2) COTTON DRY—BAGAVADI FARM—cont.

Bagavadi.	{	36 15 0	..	..	..	..	..	..	..	..	..	..	..
		22 10 0	..	..	..	..	..	..	..	..	..	..	..

## ABSTRACT.

	Current rates.		Pre-war rates.
	RS. A. P.	RS. A. P.	
1 Average profit for fields which show a profit .. .. .	59 9 0		No figures available.
2 Average loss on all fields.	2'00	= 29 12 6	





APPENDIX IV—*Water rates to be collected in earlier years of irrigation under the project Illustration.*

NOTE.—*Fasli x is assumed to be first complete fasli in which irrigation commences.*

Water-cess payable in fasli.

	x.	x + 1.	x + 2.	x + 3.	x + 4.	x + 5.	x + 6.	x + 7.	x + 8.	x + 9.	x + 10.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
<b>I. A ryot gets Mungari irrigation for 8 acres. The compulsory levy will be on at least—</b>											
1 Two acres in fasli x .. .. .	2 0 0	4 0 0	6 0 0	8 0 0	8 0 0	8 0 0	8 0 0	8 0 0	8 0 0	8 0 0	8 0 0
2 Another two acres in fasli x + 1. ..	..	2 0 0	4 0 0	6 0 0	8 0 0	8 0 0	8 0 0	8 0 0	8 0 0	8 0 0	8 0 0
3 Another two acres in fasli x + 2. ..	..	..	2 0 0	4 0 0	6 0 0	8 0 0	8 0 0	8 0 0	8 0 0	8 0 0	8 0 0
4 Last two acres in fasli x + 3. ..	..	..	..	2 0 0	4 0 0	6 0 0	8 0 0	8 0 0	8 0 0	8 0 0	8 0 0
<b>Total ..</b>	<b>2 0 0</b>	<b>6 0 0</b>	<b>12 0 0</b>	<b>20 0 0</b>	<b>28 0 0</b>	<b>30 0 0</b>	<b>32 0 0</b>	<b>32 0 0</b>	<b>32 0 0</b>	<b>32 0 0</b>	<b>32 0 0</b>
<b>II. A ryot gets irrigation for long duration paddy—cotton rotation on eight acres. The block will be given water for paddy in faslis x, x + 2, x + 4, x + 6, etc., and for cotton in the Hingari season in faslis x + 1, x + 3, x + 5, etc. The compulsory levy will be on at least—</b>											
1 Two acres in fasli x .. .. .	5 0 0	5 0 0	15 0 0	10 0 0	20 0 0	10 0 0	20 0 0	10 0 0	20 0 0	10 0 0	20 0 0
	( $\frac{1}{4}$ th of paddy rate).	( $\frac{1}{2}$ of cotton rate).	( $\frac{3}{4}$ th of paddy rate).	(Full cotton rate).	(Full paddy rate).	(Full cotton rate).					
2 Another two acres in fasli x + 1. ..	..	2 8 0	10 0 0	7 8 0	20 0 0	10 0 0	20 0 0	10 0 0	20 0 0	10 0 0	20 0 0
	..	( $\frac{1}{4}$ th of cotton rate).	( $\frac{1}{2}$ of paddy rate).	( $\frac{3}{4}$ th of cotton rate).	(Full paddy rate).	(Full cotton rate).					
3 Another two acres in fasli x + 2. ..	..	..	5 0 0	5 0 0	15 0 0	10 0 0	20 0 0	10 0 0	20 0 0	10 0 0	20 0 0
4 Last two acres in fasli x + 3 ..	..	..	..	2 8 0	10 0 0	7 8 0	20 0 0	10 0 0	20 0 0	10 0 0	20 0 0
<b>Total ..</b>	<b>5 0 0</b>	<b>7 8 0</b>	<b>30 0 0</b>	<b>25 0 0</b>	<b>65 0 0</b>	<b>37 8 0</b>	<b>80 0 0</b>	<b>40 0 0</b>	<b>30 0 0</b>	<b>40 0 0</b>	<b>30 0 0</b>
<b>III. A ryot gets eight acres Hingari irrigation—four acres in Block A receiving systematic irrigation in faslis x, x + 2, x + 4, etc., and four acres in Block B receiving systematic irrigation in faslis x + 1, x + 3, etc.—</b>											
<b>Block A—</b>											
1 Two acres to be brought under irrigation in fasli x. ..	2 8 0	..	5 0 0*	..	7 8 0	..	10 0 0	..	10 0 0	..	10 0 0

2 Remaining two acres in fall x + 2.	..	..	2 8 0	..	5 0 0	..	7 8 0	..	10 0 0	..	10 0 0	
Block B—												
1 Two acres to be brought under irrigation in fall x + 1.	..	2 8 0	..	5 0 0	..	7 8 0	..	10 0 0	..	10 0 0	..	
2 Remaining two acres in fall x + 3.	..	..	..	2 8 0	..	5 0 0	..	7 8 0	..	10 0 0	..	
Total ..		<u>2 8 0</u>	<u>2 8 0</u>	<u>7 8 0</u>	<u>7 8 0</u>	<u>12 8 0</u>	<u>12 8 0</u>	<u>17 8 0</u>	<u>17 8 0</u>	<u>20 0 0</u>	<u>20 0 0</u>	<u>20 0 0</u>

\* Though this is the third year of Project, it is the second year of irrigation for the land, the rate is only half the full rate. Similar remarks apply to the other figures. The full rate for Hingari lands is reached in the ninth year as against the seventh year for other lands, and this will to some extent offset the fact reclamation has to be done for all Hingari lands, though such land will receive systematic irrigation in alternate years.

## APPENDIX V.

### FINANCIAL ASPECTS.

#### *Irrigation Revenue.*

	ACS.	An acre at RS.	LAKHS. RS.
Paddy—Long duration .. .. .	20,000	10	2.00
Sugarcane .. .. .	15,000	15	2.25
Paddy—Short duration .. .. .	16,000	6	0.96
Perennial garden .. .. .	7,200	12½	0.90
Eight months garden .. .. .	4,800	9	0.432
Mungari dry .. .. .	86,000	4	3.44
Hingari dry .. .. .	86,000	5	4.30
Protective irrigation on say .. .. .	20,000	1	0.20
<b>Total irrigation revenue .. .. .</b>			<b>14.482</b>
Revenue from hydro-electric power .. .. .			(a) 8.08
Saving in Famine Relief Expenditure .. .. .			(b) 0.76
Saving in Land Revenue Remissions .. .. .			(b) 0.54
Interest on land value collected from new colonists, sale of surrendered land, etc. .. .. .			(c) 0.60
<b>Total revenue .. .. .</b>			<b>24.462</b>
<b>Working expenses—</b>			
Collection charges at 5 per cent of irrigation revenue .. .. .			(d) 0.724
Maintenance charges at 12 annas per acre on 3 lakhs. .. .. .			(e) 2.25
<b>Total expenses .. .. .</b>			<b>2.974</b>
<b>Net revenue .. .. .</b>			<b>21.488</b>
<b>Total Capital outlay .. .. .</b>			<b>10</b>
<b>Percentage return on capital outlay .. .. .</b>			<b>2.15</b>

NOTES.—(a) As regards revenue from hydro-electric power, I have adopted the figure of Rs. 8.08 lakhs given by Mr. Thirumalai Ayyangar in statement No. 12 on page 61 of his Low Level Canal Scheme report. In my Ref. C. No. 63/46, dated 20th February 1946, I have suggested that, in the interests of protection, a small high level canal should, if possible, be excavated for irrigating an extent of about 52,000 acres in Bellary and Rayadrug taluks not commanded by the Low Level Canal. This may somewhat reduce the revenue from power but this reduction is likely to be made up by larger savings under Famine Relief expenditure and land revenue remissions than those adopted in the statement.

(b) Mr. Thirumalai Ayyangar has adopted the figure of Rs. 3 lakhs as probable savings under Famine Relief expenditure. This is excessive in view of the fact that the area commanded by the Low Level Canal Scheme includes only a very small portion of the area most liable to famine in the Ceded Districts. I have therefore adopted the figures worked out by the Board of Revenue in paragraph 13 of its Resolution No. Ms. 450, dated 21st March 1944.

(c) In paragraph 22 (ii) of my reference C. No. 52/46, dated 5th February 1946, I have estimated that a sum of Rs. 30 lakhs might be realised by way of land value collected from new colonists who will be granted portions of surrendered land, by sale of surrendered land left over after extinguishing private ownership in blocks reserved for new colonists and for collective farms, and by way of collection of betterment contribution in money in stray cases. Interest on this at 3 per cent comes to Rs. 0.90 lakh but as land values collected from new colonists will be in instalments spread over a number of years and without interest, I have reduced the figure of Rs. 0.90 lakh to Rs. 0.60 lakh for purposes of working out the return on the project. The return from this source would be more if such a large extent as 20,000 acres is not set apart as collective farms.

(d) Five per cent is the rate usually adopted for collection charges.

(e) Maintenance charges at 12 annas an acre, are the same as those adopted by Mr. Thirumalai Ayyangar.