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EDITORIAL

IN keeping with its Policy of stimulating the interest of its readers in Development Studies, this issue of the Journal of Development Administration contains three analytical and in-depth studies in the field of Agriculture and one on Programme Budgeting. We also include in this issue another of Reddin's essays on his experiences as a Change Agent.

The three articles on the subject of Agriculture complement each other. Wanninayake's treatment of the manner in which Agricultural Plan Formulation and Implementation has evolved from the early 1960's to the present day including the evolution of such Institutions as the District Political Authority and the Agricultural Productivity Committee is both comprehensive as well as detailed. His plea for an Integrated approach to Rural Development with the emphasis on planning at the grass-roots level is particularly relevant to-day.

The article on Technical Agriculture and Social Organization surveys the structure of Development Planning in this field and the organization, research and extension services provided by the Government. Having enumerated the capacity and potential of the Institutions within the country for disseminating the necessary knowledge and teaching the necessary skills, the writer makes far reaching recommendations for realizing the benefits of Training in Agriculture.

Dr. Gunadasa's Case Study of the application of Modern Technology for the intensive use of paddy lands should attract the attention of the Agriculturalist, the Development Planner and the Research Worker. The methodology of field surveys and data collection and the conclusions drawn by the writer should help evaluate the far-reaching effect of Technology on Agriculture in the developing countries.

Mr. Tirulinganathan's essay on Programme Budgeting is most topical as Government is committed to a change-over to Programme Budgeting from the conventional system which has prevailed from colonial times. Despite the paucity of literature in this field the essay provides substantial information for the reader to gauge the impact of Programme Budgeting on the Economic Development of the country. Reddin's essay holds the reader's interest with the many interesting anecdotes which focussed the mind of the readers on the problems and situations faced by a Change Agent.

It is our sincere wish that the varied fare provided in this issue would continue to stimulate interest in Development Studies.

V. C. B. Unantenne

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Programme Budget in Sri Lanka Development and Prospects*

T. Thirulinganathan

Introduction

Public expenditure refers to (annual) expenditure by Government for operating Government Departments, Advance Account Activities, Public Corporations and expenditure on Local Authorities. The mechanism of allocation of this expenditure is through the instrument of the Budget. Public expenditure is voted on by the National State Assembly which is involved in the major process of policy formulation and policy control. Policy execution is through institution of Cabinet, National Planning Council, Sectoral Committees, Ministries and Departments. The policy control function of the National State Assembly centres round ascertaining whether—

(*a*) The general policy guidelines are being carried out to achieve the purpose for which certain allocations have been made ;

(*b*) The results have been commensurate with the efforts and costs that the State has approved through the Budget ;

(*c*) The Budget execution is carried out by the executives keeping to the guidelines of economy, efficiency and effectiveness ;

(*d*) Review for policy changes and adjustments that are necessary in view of the experience thrown out during the actual implementation process.

In this main process of policy control, budget serves as a vehicle of government policy and therefore it becomes an instrument of allocating resources, managing resources and also of exercising control over the public expenditure made available through the Budget. The breakdown of the long-term plan in terms of the annual operations plan has been given expression through the Annual Government Budget. The Government Budget is expected to be as a vehicle of government policy, to link a long-term plan with an annual operation plan and an instrument of management and control by the executives and ultimately the National State Assembly which formulates public policy.

Budgetary Control during the period prior to Western Impact

(*a*) Very little is known about budget control system operative in the period prior to Western impact. It is only possible to conjecture that these systems would have been rather sophisticated since social and economic systems of these times were able to construct and maintain an extremely advanced hydraulic civilisation.

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* Material for this article has been mainly taken from my contributions at U. N. APDAC and ADI workshops held in Kulalumpur, Malaysia and Kathmandu, Nepal.

(*b*) *Period of Western Impact.*—The period of Western impact commenced in 1500 A.D. with the Portuguese, Dutch and the British ruling Sri Lanka in almost equal periods of 150 years. Very little is known of the Budget system under the Portugese but under the Dutch there is evidence that there was a satisfactory method of recording revenue and expenditure. Expenditure was categorised not only in terms of items of expenditure but also classified into very broad functional areas. The evaluation of the budgetary control system as it culminates to the point of independence in 1948 commenced with the British. The British conquest of Sri Lanka welded her into the budgetary systems as then obtaining in the mother country. With the attainment of independence in 1948, people's representatives began to vote on the Budget proposals of revenue raising and disbursements of funds for public services. Funds were voted under each Head of expenditure. The Head number assigned to each Department served as a responsibility accounting code number. Under Head of expenditure, money was provided in terms of standard sub-heads which were really input categories, like salaries, travelling expenditure, supplies, etc. As an intermediate grouping under a Head, a second tier which had groups of sub-heads, came out as a Vote. The Vote was intended to demonstrate the right of the people to authorise expenditure. At a subsequent stage of development, a differentiation of the sub-heads into standard sub-heads and operational sub-heads took place. The operational sub-heads represented activities carried out by the Department.

Changes in 1961–62

Changes in 1961–62 were a watershed in the development of the budgetary control system in Sri Lanka. A broad functional classification of Government expenditure consisting of a seven vote structure classified expenditure broadly into General Administration, Social Services and Economic Development giving for the first time a functional approach to public expenditure allocation and control. This innovation made a dimensional demarcation between the Budget as it existed and evolved under the British and set in train a new system of public expenditure allocation and control. The earlier system of Budgeting devoted itself primarily to bring into action expenditure and, income a document of Financial Balance. Its primary orientation was presentation of certain figures indicating that the Social System was not stretched beyond its capacity. The new orientation of 1961–62 drew its strength from budgetary ferment which had originated in 1950 which was primarily stimulated by the United Nations. The focits of these discussions was to make the Budget an instrument of development policy which meant that thereby the budget was among other things to reflect the allocation of resources to ensure development. For the first time the 1961–62 change made a clear demarcation between expenditure of an administration of social and capital development type. There were also further sub-categories of the three broad groups distinguishing between recurrent and capital expenditure components.

A broad matrix of economic cum functional classification adopted in Sri Lanka in 1961–62 is appended. Even though a broad frame work of an economic cum functional classification was installed, it took nearly a decade (1971) for the traditional budget to be converted into a meaningful format. The emphasis, then, was allocation of resources in terms of inputs rather than on the basis of activities and results. However, one knows that a curiously mixed development of standard sub-heads and operational sub-heads had already taken place as referred to earlier. Input orientation gave way to activity orientation and results orientation. This development blossomed out subsequently as the Programme Budget during the Financial Year 1971–72. A pilot project of three Ministries was selected for the budgetary reforms which commenced rationalising allocation of resources.

sixteen other Ministries followed suit in the subsequent Financial Year (1973) and in the Financial Year 1974 The entire Government Budget was converted into a programme Budget. The objective of introducing a Programme Budget was to formulate programmes and activities in specific terms and to allocate resources in a more efficient and rational manner, enhancing the allocative efficiency of Government Organizations, strengthening the implementation of policy and performance evaluation, with the consequent object of improving the decision-making system, with regard to resource utilisation for achievement of national goals and objectives. The programme structure gave a framework for decision-making on allocation. The instruments of decision-making and allocation of public expenditure in Sri Lanka are—

(*a*) National goals ;

(*b*) Plans ;

(i) Long Term ;

(ii) Medium Term ;

(*c*) Budget—Financial expression of government policy linked to goals but with the specific time dimension and achievable targets-objectives ;

National goals are broken down in terms of agency objectives. These in turn are broken down into functions, programmes, projects and activities. A programme is a performance oriented course of action deriving from the function of an agency reflecting each of agency's objectives with time and cost elements built into it.

The need for Programme Structure

Traditional budgeting has been associated with—

(1) Parliamentary control of finance—traditionally the emphasis has been on fixing a ceiling limit on expenditure ;

(2) Incremental expenditure—Expenditure is incurred in order to ensure that an agency continues to exist and it is a justification for past expenditure. Any increases should be supported by price levels ;

(3) An year time span—There is nothing sacrosanct in an year time span but it is noted however, that some Latin-American countries have their Budgets on a two-year basis ;

(4) An independent existence on its own right, without a link with any comprehensive document which deals with—

(i) National goals ;

(ii) Agency objectives ;

(iii) The results expected for the year ;

(iv) The cumulative effect/impact of the results over time ;

(v) Multi-year dimension of costs of an activity ;

(vi) Efficiency of performance.

The traditional system was found to be wanting in facilitating the development process in Sri Lanka. The need to link the objective of an organization, agency/department with the national goals was a fundamental ingredient in the development effort. Therefore, the emphasis had necessarily to shift to identify the activity of an agency, its performance, results expected and the cost. It was in this climate of inquiry, of the need to clarify the performance for an agency, its function to total government organization and national goals that the Programme Budget System was born.

After Independence in 1948, it had become increasingly important that all development efforts had to be centred largely on the public sector and therefore the role of the Government became more and more conspicuous when the larger interests of the people had to be met by government intervention. This took the form of a Development Plan but after serious attempts of planning on a Ten–Year and Five–Year basis it soon became clear that the Plan Implementation would be a failure if the Plan is not translated into actual operating terms so that in each year of appropriation, the National State Assembly would be in a position to decide what policies and programmes had to be followed in order to fulfil the national goals and satisfy the basic and other needs of the people. It is in this context, that the process of planning, budgeting, implementing and evaluating were considered as parts of a total management system of improvement for development. The mechanism of allocation, the structural aspects of the allocating system, the ranking of programmes and projects of various government organizations and selection of different alternatives on the basis of costs and benefits were considered crucial exercises. Thus the existing frame–work of decision–making for which an agency has voted inputs in financial terms underwent a dimensional change so that the agency could focus its prime attention on its objectives, functions and work programmes not only for one year time period but in relation to a multi-year time span. This way, an attempt to link the annual budget with the existing plan, was made.

Development of Programme Structure

The Programme structure can be developed in two ways. The country's goals can be related to functions and operations that should be undertaken by Government and on this basis, the programme is technically a segment of a function that has a major end objective. This approach has draw–backs for a developing country and most of the developing countries, (Sri Lanka included,) did not follow this method. The basic difficulty would have been with the budgetary structure where the organizational form would have to be broken up and re-built from ground upwards. The structuring of the programmes in Sri Lanka followed a cautious approach in that the programmes were confined to the frame–work of a Head of expenditure, e.g., when the Department of Fisheries considered a Programme of Inland fisheries, it did not attempt to link up with any other programme of wider consequence, the programme of meeting the protein requirements of the country. Such a type of broad programme structure should have included the activities of the Department of Agriculture a which cultivates soya beans, with that of its animal husbandry division which deals with dairy development, etc. Procedurally, a simpler device was adopted as a matter of convenience when introducing the change ; but the process is being now reviewed and a programme structure based on a functional classification based on the U.N.O. Manual is being attempted.

A Programme would consist of several activities. The activities could vary in size, scale and in nature. The activities that are considered to be similar or homogeneous are grouped together as a sub-division of a programme and titled ' project.' This is equivalent to a programme sub-category referred to in the U.S. budget. In Sri Lanka's context, a programme represents the means of

achieving one of the major objectives of an organization ; the project being a sub-division of a Programme consisting of a number of homogeneous activities. It was thus possible at a time to adopt a convenient method of having a project within the frame-work of an organizational division.

Meaning of Programme Structure

The Programme represents the sum total of efforts performed by an organization in order to achieve a part of whole of the Agency's objectives. It is possible that an agency may have more than one objective in which case the number of programmes would also vary with the number of major objectives. An example is the Colombo Port Commission where it is charged with the responsibility of—

(i) Development and maintenance of ports of Sri Lanka ;
(ii) Modernisation and improvement of cargo handling ;
(iii) Protection of the coastal line of the country's coast from sea erosion.

While objectives (i) and (ii) are inter-related and therefore would go to form one single programme objective (iii) would be covered by an independent programme with fundamentally different activities being performed to accomplish it. In theory, a Programme structure should not take into account the existing organizational system but for practical reasons, to confirm to the evolutionary pattern, the existing organizational divisions were fitted into the Programme Structure. This is more often the case at the project level.

Rationale for Programme Structure

The Prime Minister gazettes the functions of a Ministry and Departments under the Ministry. A departmental function has links with the departmental objectives which are linked to the Ministry objectives which in turn have links with the national goals. The link between the Ministerial objectives and the national goals are spelt out in broad terms whereas the departmental objectives are more specific and lend themselves to statements in clear quantitative terms. From this type of description, it should be possible for any citizen to understand why an organization exists, its targetted performance and whether this, in fact is actually fulfilling its targets. Thus the need for a programme structure arises from the need for a mechanism of evaluation of an organization in relation to its own objectives and and indirectly the National goals. Sri Lanka's initial efforts on conversion of the traditional budget into programme budget were primarily centered round ensuring clarity of the function of an agency in terms of explicit statements as to what it hopes to perform and link them with cost estimates.

After the introduction of a Programme structure several benefits surfaced out and these could be summarised as—

(*a*) Detection of overlap in operation in various Government Agencies ;
(*b*) Redundancy of some organizations in their entirety or in parts ;
(*c*) Inadequacy of man-power and other resources to attain Programme objectives in some agencies while in others, there is surplus man-power resulting in wasteful deployment;
(*d*) Structural inadequacies in organizations which prevented them from fulfilling the role that was expected of them.

The Programme structure revealed, at times the agency objectives were somewhat in conflict with national goals and that of the objectives of parallel agencies with similar work programmes. Further on the basis of a cursory analysis of programme structure of some organizations, it became evident that they had outlived their usefulness but continued because of the inertia of an incremental budget

system. The Ministry of Education, the Ministry of Labour the Ministry of Social Services, the Ministry of Parliamentary Affairs and Sports perform in certain areas similar functions, the end product being " trained man-power of different degrees and types of skills " but yet suffer the same in obtaining placement in the national man-power arena. If all these activities were subsumed under the Programme titled " Vocational Education " these handicaps could be highlighted and a more balanced programme developed.

The Use of Programme Structure in Decision-making

In Sri Lanka, the Programme Structure replaces the vote structure. With the introduction of the programme budget, the appropriation level is the Programme. In certain cases, the programme structure facilitates greater flexibility of operation while in certain other cases, the flexibility enjoyed by organizations, particularly the larger ones, were limited by a narrower programme structure. However, the total effect of the change of introducing the programme structure was considered beneficial in that a meaningful and explicit classification of government activities was born. The greatest benefit that surfaced out on mere installation of the programme structure itself was that for the first time the management was able to appreciate what they are doing, for whom and with what results and at what costs. As indicated earlier, management realised the different areas of overlap, redundancy and inadequacy. This sets in trend thoughts on—

(*a*) " a zero based approach " for analysis where the existence of an organization was not taken for granted but a root and branch analysis was made regarding the validity of its continuance, integration of organization in limited areas, if not in structure, at least in their functional co-ordination ;

(*b*) introduction of programme structure led to ranking of Programmes and Projects. Such a ranking is not only in terms of magnitudes of financial expenditure for the Budget-Year but in terms of the total programme commitments, in the distant future. Redeployment of resources had been advocated by running down one programme as an alternative to starting another.

Programme Analysis

Simple qualitative and quantitative analyses are presently adopted. It is to serve as a fore-runner of any sophisticated analysis that would be eventually undertaken. The direction Sri Lanka had taken in the area of programme analysis had been to emphasise studies for the redeployment of resources from low priority programmes to high priority programmes. Sri Lanka has not entered into the field of sophisticated programme analysis but techniques of cost benefit analysis are adopted at project formation and at admission stage. In this context, one has to distinguish between the objectives of programme analysis which is to re-shape policy and that of project analysis which is a micro-economic analysis. In project analysis, the project is placed in the context of the capital development programme which programme would contain both capital and recurrent cost elements.

Performance Measurement

Meaning of Performance Measurement—One of the many objectives of programme budgeting as opposed to the traditional Budget is to make available information on the following :—

(1) Programmes that should be undertaken by an agency to fulfil its objectives as far as they are consonant with the national goals ;

(2) The extent to which chosen programmes are effective in fulfilling these objectives ;

(3) The cost of these programmes with cost effectiveness analysis.

performance measurement is the means of ascertaining whether the programmes are being run effectively and efficiently to achieve the purpose for which they are undertaken. The question of effectiveness of a programme, which is the relationship of the objectives to achievement and efficiency which is the relationship of costs to achievement become two important ingredients in planning and Budget management. The performance measurement should indicate the impact of a programme on ensuring attainment of national goals. When considering the programme objective within agency limits, performance measurement should indicate to what extent the programme is fulfilling the agency's objectives and at what costs. On this basis, certain programmes may have to be abandoned and other programmes substituted if, effort-wise, and cost-wise, programmes are not worth being continued. Even in areas, where programmes cannot be changed, it may lead to the re-thinking of objectives of the agency. For purposes of policy analysis, performance measurements which are quantitative in character would serve as a stimulii. However, within agency and programme limits, the use of performance indicators go to indicate the results of a programme, the impact such a programme may have on the hierarchial levels of organization, the work load that should be discharged at each level, for a programme to make an adequate impact, is more germane.

The importance of Performance Measurement for Programmes

The difference between the programme budget and the traditional budget is that the traditional budget had a greater element of incrementalism which clouded analysis as against programme budget which is zero-based. To achieve this, the performance measurement becomes the indicator as to how the programme fares and whether such a programme should be continued or discontinued, changed, substituted or modified, *e.g.*, If it is proved under Filariasis Campaign that the extent covered by spraying and the frequency of spraying had no significant impact on the reduction of filariasis cases, but on the other hand if it is shown that the incidence of filariasis can be reduced by intensive curative campaigns, which need not cover a longer time-span and is less costly, then such an analysis would indicate the direction in which the investments of the programme should be made and surplus resources from the analysed programme to be siphoned off to other priority areas such as anti-malaria campaign.

Should Performance Measurement be applied to all Government Programmes or should its application be limited to certain types of Programmes and Projects ?

Sri Lanka's experience on the application of performance indicators on Programmes is that the impact of a programme cannot be easily measured. It is understood that sophisticated methods of determining the impact of programmes based on linkage methods, etc., as determined by advanced econometric methods may be necessary to point out to what extent the programme has fulfilled national goals. Attempts are now being made to develop appropriate social indicators to measure effectiveness of programme. However, from the management point of view, application of performance indicators is operative at the project level. The performance indicators are of the work-load type serving mostly the purpose of internal organizational control, showing work volume targets. In many cases, mersures of work to indicate results, under a project and an activity have been developed and usefully applied. The application of performance measurement indicators are limited to programmes which lend themselves to be readily evaluated.

Sri Lanka's estimates have two dimensions under the Performance Measurement System :—

(1) The productivity ratios ;

(2) The unit costs ;

Cost of inflation and pay-adjustments distort unit costs figures and they may not lend themselves easily for trend analysis. However, quantitative adjustments in regard to the increased unit cost could be made while performance system remains unchanged. With regard to the productivity ratio, the distorting feature is contributed by different levels of staff being aggregated and unit of production per man year worked out on an arithemetical average. The situation could be remedied by adopting certain weighting factors using activity sampling methods and arriving at productivity ratios which are more realistic.

Lessons learnt from Performance Measurement under the new system of Budgeting

The usefulness of Performance Measurement, may be summed up as follows :—

(1) Detection of overlap, redundancy and inadequacy ;

(2) Detection of the need for redeployment of resources ;

(3) Revamping of priorities ;

(4) The need for further improvements in the system to lend itself to more effective analysis.

Monitoring, Reporting and Evaluation of Programme Performance

Programme Budget Classification by itself does not serve much purpose unless strengthened through a performance evaluation system, a system of programming of expenditure and a system of monitoring process. Accurate recording of expenditure and physical performance data and their timely reporting are essential ingredients of the system if the progress review or programme performance evaluation are to yield information leading to reformulation of policy. Thus the progress review and evaluation of programme performance through a system of comparison of planned figures against actuals both in financial and physical terms are absolutely important if effective utilization of resources to achieve national goals is to take place.

In Sri Lanka the limitation to the programme budgeting exercise is that the accounting is on a cash basis rather than on an accrual basis. As an interim step under the new system recording of expenditure is on the basis of commitments and appropriate vote ledgers have been devised to extract information both on a cash and commitment basis of expenditure.

A further limitation on the evaluation of programmes in terms of efficiency and effectiveness is that the real product costs do not flow out from the present accounting records. In certain other countries cost budgets are supplementary to expenditure budgets.

Performance Evaluation

Performance evaluation under the traditional budget had been control-oriented and evaluation of results of government spending could not have taken place in terms of whether national goals or departmental objectives are being fulfilled. The best that was possible under the traditional budget was to reveal that the expenditure had been incurred properly and whether provision had been exceeded or under-utilised. The institutional arrangements that exercised control over Public spending under the traditional budget were that of the Auditor-General and Public Accounts Committee. These two institutions of Parliament are answerable to the National State Assembly but the structure of the Budget itself was a constraint for any objectives evaluation. The nature of the evaluation was limited by the existing budgetary information system which did not incorporate performance targets or output

measures linking them with agency objectives and national goals. Currently under the programme budget system the Auditor–General and Management Services Division of the Ministry of Public Administration together with the operating Ministry officials and Treasury Officials are partners in the process of performance evaluation throughout the Government Departments on a continuing basis. The performance evaluation in Sri Lanka is conducted monthly, quarterly and annually. The Ministries and Departments conduct monthly reviews of expenditure incurred and the targets achieved. There could be exceptions where these are done quarterly. The Treasury, Auditor–General's representatives and the representatives of the Management Services Division conduct quarterly review and progress. The annual review is in the form of evaluation in that one does not confine himself to progress review only but the exercise is extended to revision of the current year forecast, programme analysis on a zero based approach and revision or modification of programme structure, improvements in the adoption of performance indicators and also tentative determination of resource allocation for the ensuring financial year. Taking an over-view of the process of evaluation that have taken place for the last two financial years under the programme budget system the benefits that surfaced are—

(i) location of areas where programme and projects have to be re-structured ;

(ii) location of redundant programmes or projects ;

(iii) areas of under-expenditure and over-expenditure ;

(iv) location of areas where total cost estimates may need revision either immediately or during the year or perhaps at the end of the financial year ;

(v) arriving at appropriate magnitudes of allocation for the ensuing financial year, minimising the conflict areas in the field of resource allocation amongst competing claims.

Programme Budget for Local Authorities

All Local Authorities have based their budgets on a programme budget format. They have adopted standard object classification of the central government. Developments are taking place in major local authorities in the direction of introducing performance measurement systems. The significant feature in the Local Authority budget is that standardised programmes and projects have been developed and accounting reforms a had gone hand in hand with the introduction of programme budget. Inter-council comparison is possible under the present system of budgeting adopted by local authorities.

Assessment, Appraisal and Re-Valuation of the New System of Programme Budgeting—Problems and Issues.

(*a*) *Human/environmental.*—The Head and Sub-Head concepts had been strongly entrenched and the introduction of programme and projects structure where the cost elements are isolated for each project was a new feature as opposed to the traditional system of operational Sub-Head being aggregate of several cost elements, gave the impression that an unbearable load of increased documentation was cast on operating officials. This claim is valid to some extent but the vehemence of the opposition was probably due to antipathy to change. The man power skills of the accountancy discipline were used in large measure to build up the new system and it was this class of officials who showed keeness and interest. However, notwithstanding the importance of this category of officials from the Budgetary point of view, the demand of the change in concept required active participation of Management Officials. The initial targets did not necessitate much involvement in

the intricacies of programme budgeting. This of course is natural considering the fact that historically budgeting lay in the province of the Accountant. High level officials of the Government though initially motivated by the Secretary of the Ministry of Finance and the Treasury at various Seminars and Discussions soon delegated the budget function either to the Senior Deputy or the Chief Accountant of the Organization. Another programme that slowed down the indepth application of the programme budgeting across the entire Government was due to inadequate motivation of the Officials concerned in implementing the change. However, it should be mentioned that the Training Institutions of the Government recognised the lasting value of the budgetary changes and attempted to design and conduct training courses with the association of the Ministry of Finance.

It was natural that programme budgeting was regarded with a certain degree of reservation in that under this system, objectives, activities and expected work performance would become very clear and particularly when result connected with costs become explicit an agency or organisation which is slow in fulfilling its objectives or targets is likely to be faced with a possible prospect of financial allocations being curtailed. These fears were minimised by a progressive decentralisation of decision making power. Variation of Estimates under virement procedure were relaxed year after year and increased delegation of powers to vary expenditure by Departmental Heads were given. One would not fail to notice the new attitude developing at the centre, the control orientation giving way to objective efficiency and effectiveness criteria rather than to mere bringing expenditure to account.

We have to bear in mind that in the environment of a developing country where analytical skills are not all that available programme analysis review would be the weakest part in Sri Lanka's Budget System and it cannot be claimed that evaluation that had so far conducted had much impact on abandoning of unproductive programmes. In a developing country like Sri Lanka, it is not unusual to find Institutions/Organizations who seem to have discovered the secret of eternal life and refuse to die despite the fact that the environment which supported them has changed.

(*b*) *Technical Organizational and expertise*—The main problem area in achieving the objectives of the programme budget system is in determining the mechanism to effectively link the budget with the Plan. The weakness mainly lies in the fact that the planned targets themselves seem too high for the resources of the country to afford annual financing. The saving rates expected by the plan had not been realised and therefore corresponding investment rates could not maintain the pace that was expected. Broadly speaking, however, the total capital budget allocation in the immediate past two years had reached the magnitudes prescribed in the plan but taking the inflation percentage into consideration it had to be admited that resource allocation had not been keeping pace with the planned expectations.

High proportion of the Budget goes to cover sunk costs and therefore allocation of resources to new fields remain at marginal levels. The multi year approach to budgeting has been attempted with a view to make it a rolling Plan. It became important particularly in Sri Lanka's context where most of the Projects start with one year time dimension but invariably extend over a couple of years thereby at the Project admission stage the Government budget gets committed to non-viable projects. Performance measurement system adopted so far is work-load oriented and therefore it lacks the necessary will to change the scale and direction of programme and project. There is a serious lack of properly defined performance indicators with adequate weighting factors and correction indices to productivity ratios. The performance measurement system could be made effective for Policy appraisal only with development of social indicators and such other effectiveness indicators. The present system can only help the Management in their control and review function but it cannot help in policy control. The impact of a programme can only be worked

out with the application of sophisticated techniqes involving statistical methods. Hence the building up of adequate statistical base becomes an essential pre requisite for the programme budget system to enter the arena of policy analysis.

Organizational

Traditionally, in Sri Lanaka the Secretary of the Ministry is the Chief Accounting Officer and the Head of the Department under a Ministry is the Accounting Officer. Invariably the Chief Accounting Officer, in his Ministry is involved in policy formulation, direction and review and there fore the Accounting Officer shares a major responsibility in the field of accountability. Accountability in the past has been identified as ensuring propriety of expenditure and adhering to the limits prescribed by parliament. In this function the Chief Accountant of a Head of Expenditure played a crucial role relieving the Head of the Department to a great extent and permitting him to direct operations of the Department. The Chief Accountant of a Department has thus become the repository of all financial information and even physical performance data collected from various agencies are consolidated at this point. In this environment he logically becomes the officer–in–charge of Budgeting and accounting but with the introduction of new concepts, higher level management was drawn into the Programme Budget System. In several Ministries Additional Secretaries or Senior Assistant Secretaries function as Budget Officers of the entire Ministry, but as far as a Department is concerned invariably the Chief Accountant plays the role of a Budget Officer. Progressively, with the introduction of Programme Budgeting an informal organizational set up has developed leading to the appointment of Budget Officers and of identifying a staff unit with the Budget Officer. A rudimentary Budget cell has been evolved.

Several attempts were made to formalise thiis arrangement but because of the danger of conflicts the attempts were kept at a low level. There is no separate Budget Service in Sri Lanka or Programme Analysis Service as found in United States, Canada or Philippines. This aspect is being approached with caution and Sri Lanka has not yet fully developed an organizational arrangement to effectively deal with the responsiblilites that have been caused by introduction of a new system of Budgeting with the related links to national planning.

Organizationally at the central guidance level the relationship between Ministry of Planning Ministry of Plan Implementation and the Ministry of Finance are rather loosely defined. Each organization is very careful not to encroach on each other.

Expertise

Training Programmes conducted over the last five years had generated, at the operating and middle management levels, officers capable of handling the tasks under the new Budgetary System. However, lack of exposure to other countries experience had been a limiting factor in getting the full package developed in Sri Lanka.

Future Developments

The programme budget system as developed in Sri Lanka had taken the path of cautious innovation. However, it is necessary to progress towards a programme structure superceding the present Head structure. Future lines of development will be in the adoption of functional codes, which would group together the programme structure of each Head of expenditure and there by weld them into true programmes. Heads of expenditure or sub-sections of its, would thereby eventually become constitutent elements of different programmes.

The weaknesses of the existing performance system have been pinpointed. The performance indicators are based on arithmetic averages, sometimes aggregating efforts of varying time spans. The adoption of statstical techniques of activity sampling ete. and th· introduction of sophisticated apportionment methods for time and costs have commenced. Preliminary studies have started in the Department of Labour, which could be considered as a fore-runner in the field of indepth application of programme budget. The experience gained from this effort would be extended to other Agencies. The productivity indices to enable analysis of man power of different ranks and skills which produce common results, under an activity are necessary. These are being developed on a rational basis by assigning weighting factors so that discrepancies and incongruencies in arriving at productivity indices can be eventually eliminated.

A new division of the Treasury relating to pricing and wage policy has been set up. One of its chief functions is to determine periodically price and wage inflation rates, so that budgetary trend analysis which is now distorted by price and wage inflation could be improved. One of the many objectives of the Division of the Budget which is in charge of the Budget Document is to straddle all organizations ranging from those which are responsible for perspective planning to the humblest implementation projects in the field. Naturally the nature of information that has to be submitted through the Budget Document, the control data that would be made available would be different depending on the perspective of particular agencies and their immediate needs. In time, the Budget Estimates in Sri Lanka will link the plan through economic functional cross classification to operations and simultaneously permit allocation of resources through programme and sector analysis and performance norms. As of yet these linkages are confined to Government Departments. It is hoped to extend the system to revolving funds commercial activity (Advance Accounts) and once the Public Corporation Sector is also brought under this discipline the system for public expenditure control would be reasonably well established.

The development of a district political authority system should eventually lead to the formulation of a District Budget. The question that arises is whether the development of a regional or district Budget is consistent with Programme Budget. This is a relevant question since the pronounced effect of implementation of programme budgeting in all countries is an enormous centralisation of powers, but in Sri Lanka the direction that the programme budget would take appears to be deliberately determined in opposite lines. The programme budget development should eventually lead to the re-organization and re-structuring of Government Agencies. Sri Lanka in common with other developing countries inherited in administration created to serve the needs of Law and Order maintenance. With Independence, development needs assumed pre-eminance yet old structures of administration continued with their old cultures. The most that happened was that there was a slight bending to fulfil the new needs but no fundamental alterations of posture took place. The Programme budget with it emphasis on costs, allocation efficiency and zero budget approach lends itself admirably to stimulating agencies to be "born again" to serve specific developmental needs. With the development of programmes on the basis of functional and economic cross classification the Head structure would give way to a nation wide programme structure where the programme would be formulated on a District Budget Basis with District Ministors spearheading the implementation effort. Thus the Development in Sri Lanka seems to suggest that eventually through the District Budget System which is the basic framework of the District Political System would blossom into a National Programme Budget.

Summary

The political and administrative environment in Sri Lanka has always been conducive to experimentation. The adoption of improved methods of bugeting incorporating some principles of PPBS taking everything into consideration was relatively an easy task.

The introduction of Programme Budgeting was evolutionary. The first step was where cost elements and activities became segregated, and aggregated at different levels, ranging from the task level to the object level, leading eventually to a Programme-Project Classification.

Commencing from a matrix arrangement which showed a broad framework of a cross classification of functional areas and economic aggregates, the Budget structure of Sri Lanka blossomed out in 1974 into a Programme, Project and Activities format showing wherever feasible, performance data incorporating productivity ratios and unit costs.

All elements of Programme Budgeting have been introduced in Sri Lanka in varying degrees of depth.

Adoption of programme budget classification in the Central Government pinpointed some benefits like the identification of areas of overlap, redundancy and inadequacy of organization to meet their objectives.

The Programme Budget of Sri Lanka differed from that of advanced countries in that the programme structure had been built on existing agencies, the Head superseding the programme structure. However, it should be noted that this model is an experssion of a projected approach which is necessary when introducing changes across the board in all Government Departments.

The weaknesses in the system operative in Sri Lanka have been identified and are summarised as follows :—

(*a*) The Programme Budget in Sri Lanka, is agency-oriented and cannot be said yet to be goal oriented in the strictest sense of the term ;

(*b*) The indepth application of performance measurement indicators has been limited to the development of work load and work results type of indicators. These are inadequate in that linkage of the objectives of the organization with the national goals is not evident. Further, without a fool-proof system of discounting inflationary costs contributed by price increase on materials and wage increases, the trend analysis of productive employment and unit costs becomes a qualitative and subjective ;

(*c*) Operational planning, monitoring and review procedures are limited to a one year time span and the multi-year dimension of a Programme Budget has not yet been adequately established.

The aspect of Programme Analysis and Review had been limited to simple qualitative exercises through areas for Programme analysis have surfaced, at the regular progress review conducted at the Ministry of Finance.

Organizational changes in tune with the improved model of integrated budget system had not kept pace with the changes that have been introduced in the Planning and budgetary system of the Central Government of Sri Lanka. There is no separate budget service as in the case of advanced countries like U.S.A. and Canada of the West and Philippines of the South East Asia region.

However, the beginning of organizational change had taken place with the setting up of the programme budget unit at the centre. It has established close links with budget cells in different Ministries and Departments.

Attempts have been made to improve the budget document, to make it more meaningful to the national planners and other officials of the Central guidance cluster of Ministries. Revisions of the standard object classification, standardisation of object details, introduction of a dividing line between capital recurrent expenditure and adoption of economic-cum-functional classification on the basis of the U.N.O. draft manual on Government financial statistics, extending the Programme Budget format to local authorities, public corporations and statutory bodies and to some revolving fund activities (Advance Accounts), introduction of a man power budget with effect from 1977, where Budget would now differentiate between posts by administrative (salary scales), occupational and trade categories, are the innovations introduced recently.

Providing a multi-year dimension to the budget has been attempted for the year 1977 and this is expected to play a crucial role in changing the vision of the Ministries and Departments on expenditure planning in the future.

Local Authorities of Government of Sri Lanka have been intimately involved with the standardisation of Programmes and Projects. This has enabled the Local Authorities to make inter-council comparisons.

The organisationa divisions of the Ministry of Finance have been strengthened with adequate statistical skills and it is hoped that the incongruencies in the application of the performance measurement system could be eliminated in the future.

The initial expenditure on the Decentralised Budget has given confidence for future development of a District Budget System. This strengthens the hand of policy implementation. The Institution of District Political Authority has been progressively recognised as a viable instrument of effective plan implementation. The logical consequence of this development would lead the country to have a distinction between the national and district budget with the contral Ministries functioning more or less in advisory capacities while the district organisations are given exclusive responsibility for district development plans and their implementation.

The complex exercises involved in the indepth application of programme budgeting has taken the country closer to the area of computerisation and it is hoped that with a satisfactory system of coding accounts the organizational limitation to the programme project structure would be overcome.

Finally the improvement efforts adopted in the past, in the direction of an integrated approach to budgeting have to be strengthened by further improvement of programme project structure, the removal of incongruencies in the performance measurement system, adoption of improved methods of operational planning and programming with introduction of a multi-year dimension to budget expenditure, and with adoption of programme analysis and review techniques to strengthen the zero based budget approach and provision of an economic-cum-functional classification which would form the basis of sectoral allocations and agency allocations in the future year and to make the annual budget as an effective instrument of policy formulation, implementation and control.

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The Organisation for the Formulation and Implementation of the District Agricultural Programme in Sri Lanka

P. B. Wanninayake

Introduction

The agricultural sector in Sri Lanka is usually divided into two well-defined sub-sectors :— 1. The plantations—which are well organised on modern lines and fall more appropriately within the " industrial " segment of the economy. 2. The traditional agriculture—which includes paddy, subsidiary food crops, animal husbandry, etc.

This paper confines itself to the second category mentioned above. More specifically it, seeks to examine that part of the activity for agricultural development as spelled out in the annual agricultural plans of the Ministry of Agriculture and Lands. Since the intensive campaign for food production—more popularly known as the " Food Drive "—was launched in 1965, the Government has systematically and consistently formulated and implemented annual agricultural plans.

The need for an intensified effort of this nature can hardly be overemphasised. Despite the fact that Sri Lanka is a predominately an agricultural country she spends nearly half of her foreign exchange earnings on the import of food items. With a deteriorating foreign exchange situation this position could not continue. On the other hand agriculture provides much scope for import substitution, improving the national economy, solving the balance of payment problem and providing expanding markets for industrial products. Further, it could provide additional opportunities of employment for the growing population in rural areas.

The primary objective of the Government in launching the campaign was the attainment of self-sufficiency in food : both rice and subsidiary food crops. Though the country's achievement in the production of subsidiary food crops was impressive, the attainment of self-sufficiency in rice is yet to be realised. For example, the 1972 target for paddy was estimated to be 78 million bushels, but the actual amount recorded was 62.9 million bushels (N. Balakrishnan 1973).

It may be that the failure to attain the targets was at least partly due to reasons beyond the control of man-like the unfavourable weather conditions. But there is a wide range of activity over which control could have been exercised. The planning effort is directed towards securing the co-orgination of activities of several departments, the concerted efforts of a number of statutory and voluntary organisations and the active co-operation of the farmers.

The creation of a viable small sector in agriculture is a prerequisite for effective implementation of an agricultural plan. As the Five-Year Plan stated " The ills of the small sector can be remedied only by an attack on a broad front, ranging over the institutional, organisational, financial and technical services available to the cultivator."

This paper assumes that the subject of agricultural development cannot be treated in isolation from the system of inter-related societal changes of which it is one aspect. The whole subject of agricultural development must be viewed in the context of :—

(*a*) the overall economic, social and political development in the country.

(*b*) the institutional and organisational structure designed to achieve these objectives.

It is proposed to examine briefly the stages in the development of the machinery for plan formulation and implementation, see how effective the present structure is, and suggest certain changes that seem to be desirable.

The administrative set up-plan formulation and implementation (1965-70)

At the apex of the organisation for agricultural planning was the cabinet sub-committee, chaired by the Prime Minister himself. Planning was assigned to the Ministry of Agriculture. The task was handled by a special division in the Ministry headed by the Director of Agricultural Development.

The bulk of the work in connection with the preparation of the targets, implementation and progress control was done throught the district administration. This organisation was on a three tier system :—

(*a*) *The District Level* :—The district formed an important unit in the planning process. The Government Agent co-ordinated the activities of the officers of the relevant departments, who formed themselves into a committee. This committee was the main instrument of plan formulation and implementation in the district. It also supervise the activities at the divisional level ;

(*b*) *Divisional Level* :—The organisation at this level was similar to the one outlined above. The Divisional Revenue Officer functioned as the co-ordinating officer and also supervised the activities at the village level ;

(*c*) *Village Level* :—The field officer at the village level served as the link between the organisation at the divisional level and the farmers. He was expected to give the required guidance to the farmers and also collect the data necessary for planning and information need for progress control.

The district administration was strengthened by the appointment of hand-picked senior public servants as G.A.A.. With a view to relive them of much of the routine administrative functions, additional government agents were appointed to assist them.

Both as an instrument of economic development and a device for administrative co-ordination, agricultural plan was a significant departure from what existed upto that time. The total acreage under paddy and subsidiary food crops came within the purview of the plan. All the operations and stages in agricultural production—from the granting of agricultural loans to the sale of the produce were programmed for. Targets were drawn in consultation with the farmers. Progress was regularly checked. Corrective measures were taken where mecessary.

The scope and the comprehensivensess of the plan and the variety and diversity of functions connected with it presented a challenge to the public service. More co-ordination than that existed hitherto was called for. The approach was clearly project-oriented in that, definite targets were set and the administrative machinery was directed towards achieving them within a given time schedule.

However the system was not without its shortcomings. The administrative change effectey for the purpose of the programme had an element of superficiality. The change did not take deed roots. The co-ordination which the Government sought to achieve depended more on the personalitd of the officer rather than the soundness of the system itself.

The failure to achieve the targets should not belittle the importance of the plans of these early years. There was a definite increase in production. A large section of the farmers switched on to modern methods of agriculture. There was a general acceptance on the value of co-ordinated effort towards the goal of self-sufficiency in food.

The process of politicization

The effective involvement of the farmers is the most vital aspect in any agricultural plan. This fact has been in the minds of the planners from the beginning. During the period from 1965-70, certain measures like consulting the farmers in preparing the targets, conducting farmer training classes were taken to secure this involvement. However there was a growing body of opinion—particularly in the political circles, that agricultural planning was largely in the hands of the public servants. It was felt that, in order to make the food drive more effective, certain institutional change were necessary. The changes introduced during the post 1970 period brought about a great degree of politicization of institutions connected with the agricultural planning.

(*A*) *The appointment of the District Political Authority.*

The appointment of D.P.A. in 1973 was the most important step in the process of politicization of the administration. It was set up in recognition of the fact that the interdepartmental co-ordination that was expected to be brought about. through the office of the Government Agent was inadequate. The introduction of political leadership at the district level seemed to be the answer.

There were two important function assigned to the D.P.A

(i) The management of the decentralized budget

(ii) The co-ordinating of the activities of various departments involved in agricultural planning.

(B) Agricultural Productivity Committees.

These were set up under the agricultural productivity law No. 2 of 1972. There was to be an A.P.C. in each local authority area for the promotion and development of agriculture and formulation and implementation of agricultural plans pertaining to the area of operation. The cultivation committees as reconstituted under the provision of the agricultural lands law No. 42 of of 1973 became agents of the A.P.C.

According to Section 23 (3) of the Agricultural Productivity Law the A.P.C. "shall be appointed by the Minister and shall consist of not more than ten person appearing to the Minister to represent intersts of persons engaged in agriculture or such other persons as the Minister may think necessary should be appointed."

Most of the functions performed by the D.R.O. in connection with agricultural planning were transferred to the A.P.C., which in effect replaced both the D. R. O's office as well as the cultivation committee as the nucleus of planning.

In view of the great impact these two institutions had on the machinery for planning and plan implementation, they merit a detailed discussion.

Planning requires political committment. It is natural therefore that political leadership was introduced at this critical point in the planning prccess—namely the district. Due to a number of reasons the position of the G. A. as a co-ordinating officer had weakened. Thus the appointment of the D. P. A. could help to strengthen the process of co-ordination. Also the D. P. A. could relieve the G. A. from the political component of decision-making and help to establish a more direct and effective channel of communication with the political leadership at the national level. It was contended that the political direction at the district level, properly channelled could facilitate the task of mobilising the support of the people in implementing development programmes.

The appointment of the D. P. A. can be regarded as a useful experiment. It can be viewed as a stage in the process of readjustment of the district administration to suit the needs of a rapidly changing society. It was, however, not an unqualified success. The most glaring defect in the system was the lack of definition of the respective roles of the D. P. A. and the G. A. Much depended on the quality of statesmanship of the holder of the office of the D. P. A. The extent to which the national perspectives were given priority over parochial interests and the degree of appreciation by the D. P. A. of the problems faced by the administration depended on the individual attitude of the D. P. A. Much was left vague and undefined.

In comparison with the D. P. A., the A.P.C. was even less effective as an instrument of planning The reasons are not far to seek. The method of selection of the members of the A. P. C. namely nomination by the Minister—did not help to attract the best individuals. The members did not command the confidence of the people whom they were called upon to serve.

The statutory powers conferred on, and the nature of the functions assigned to the A. P. C. invested it with a great degree of influence and prestige in the locality. It was necessary therefore that the members should enjoy a great measure of acceptance from the people.

Some of the members did not possess sufficient educational qualifications, training or knowledge. Sometimes they were not practising farmers and as a result they were not familiar with the problems faced by the farmers. There were instances when members were found wanting in honesty and integrity.

The contact between the A. P. C.' S. and the government officials was inadequate. The relationship between the A. P. C. and the officials connected with the agricultural plan was not satisfactorily defined. Some departments, however had made suitable arrangements. But the others left the position vague and undefined.Thus the co-ordination between the A.P.C.'S. and the government departments left much to be desired.

Despite these shortcomings, the concept of the A. P. C. deserves the serious attention of planners for two important reasons:—

(*a*) It contained the principle that agricultural planning should be the direct responsibility of the farmer himself while the government official played only an advisory role. Whether this aim was realised will be examined later in this chapter .

(*b*) Each A.P.C. was to have its own agricultural service centre which would serve both as the office of the A.P.C. as well as the convenient point at which supplies and services needed by the farmers would be provided. All the government officials who handled functions connected with agricultural development at this level were to operate from this centre. Whatever the unit of planning at the divisional/village level may be, it is imperative that there must be one office, centrally located, from which planning activity could be directed and controlled. In that sense the A.P.C. was a step in the right direction.

The need for an integrated approach for development

The appointment of the D.P.A. and the establishment of the A.P.C. are two of the attempts to secure better involvement of the people in the planning process. As the brief discussion above shows, these experiments had limited success mainly because no attempt was made to deal with the problem in its entirety. This explains why many of the changes introduced at the national and district levels had some beneficial results, but failed to have an impact at the divisional and village levels.

If one examines the position below the divisional level, it would appear that the most striking feature is the multiplicity of government departments and organisations—both statutory and voluntary —engaged in development activities. Several government departments have their own field staff while the educational qualifications and training of some of these officers are similar, their areas of operation are not co-terminus. The scope of activities is narrow. Either there is duplication of each others work or working in water-tight compartments. The effort of the officers are not properly directed towards the common object of development.

Within a small geographical area, there are several organisations like the village council, the Rural Development Society, the co-operative society and the A.P.C.—to name only a few. Some of these organisations are competing to perform similar types of functions. As a result much of the energy of the membership is wasted. In predominantly rural areas, there is the problem of finding sufficient number of people to provide leadership to these numerous organisations. There is of course the common problem of non-availability of financial resources to carry out the development programmes, undertaken by these organisations.

In case of some of the organisations, the scope of activity is so narrow, that they fail to evoke much popular enthusiasm.

The activities of all these departments and organisations have the common objective of achieving economic and social upliftment of the community. The problem lies in the fact that their energies are divided. The harnessing of the efforts of all these organisations calls for an integrated programme of development.

As Clifton R. Wharton Jnr. pointed out " Only an integrated approach which recognises and takes into account major inter relationships among a wider range of variables than those raditionally the concern of a single discipline can provide an appropriate framework for studying the dynamics of change ".

Organisation for agricultural development

" Planning is not only the efficient determination of target instrument relations, but essentially a politico-economic process that draws together the techniques of economic analysis, the forces of consensus building, decision-making and action taking " (Taake)

Each country has its own form of organisation based on the ideology and the political, economic, social and cultural system.

It is useful to examine some of the important aspects of the planning process in Sri Lanka and see how the activities of the government departments and the statutory and voluntary organisations can be co-ordinated to secure an integrated institutional framework for agricultural development.

(1) *Administrative Organisation for planning.*—The District continues to be the focal point in the planning process. But the revenue Division which was the next link in the chain has lost much of its functional usefulness since the creation of the A. P. C. The area of the A. P. C. is too small and it is too remote to be controlled by the Kachcheri. It is necessary to have an organisation at the Divisional level for effective supervision of the work at the A. P. C. Level.

(2) *The basic unit of planning.*—Originally the cultivation committee was the basic unit of planning, While it was a convenient unit for supervision by a village level officer, its area of authority was too small for the formulation of a comprehensive scheme of development. Both geographical and functional aspects taken into account it would appear, that a village council area would be the ideal unit of planning. (It should be noted than an A. P. C. was set up for each village council area.)

(3) *Geographical congruence of the area of authority/operation.*—Different departments and agencies engaged in development activity have their own area of authority/operation. The area of authority of one department is not always co-terminus with that of another. As a result co-ordination of activities become difficult.

(4) *The role of the public servant in planning.*—The need for active participation of the farmers at all stages of planning can be hardly overemphasized. But it should also be remembered that planning is a specialised task which calls for particular type of knowledge training, and skill. Experience of many of the village level organisations in the country has shown that this kind of skills is not readily available within the village. Therefore a certain degree of leadership has to be provided by the public servants working in co-operation with the people.

Conclusions and suggestion

An integrated programme of community development is essentially a dynamic process. Unlike the programme of a department or self contained organisation, it is multifaceted in character. It seeks to bring about not only agricultural or industrial development, but improvement in all aspects of the economic and social life of the community in an appropriate measure ; finally seeking to achieve the development of human personality as a whole.

It follows, therefore, that planning must be directed towards development in its entirety. In the context of Sri Lanka, this calls for a major restructuring of the institutional set up. It is suggested that in each of the units of planning as proposed in a previous paragraph there should be one organisation for planning. This would be the nucleus to which the other departments and organisations will be connected. Tasks performed by the government officials and the activities undertaken by the various organisations could be channelled through this body.

The public servant has an important role to play at all the three level, namely—District, Divisional and Village. His active participation at the village level is of particular significance because it is at this level the actual mobilisation of the people takes place. The officers who handle development functions at this level should have a basic training in agriculture and community development. The scope of their activities should be much wider than that of an extension worker in the ordinary sense of the term. He must have an insight into the problems faced by the people. He should function as the friend and guide of the villages within his area of activity. The ideal arrangement would be to appoint one such officer—who may be styled—Sanvardhana Sevaka Niladhari—for each Grame Sevaka Niladhari Division. While the Grama Sevaka Niladhari attends to the duties connected with routing administration, the Sanvardhana Sevaka Niladhari can deal with matters pertaining to development.

At the village council level, there can be an officer to co-ordinate the activities of these officers. Likewise the organisation must be linked to the divisional and the district levels.

The integrated programme envisaged here differs from the present system in two important respects (1) Agricultural development as a part of a more comprehensive programme of development. (2) The activities of the departments and agencies will be channelled through and the efforts of the people will be harnessed at a nucleus—namely the organisation for development at the village council level. It can be linked to the next higher level organisation as it is done under the Panchayati system or by administrative arrangement depending on the method of constituting these planning bodies.

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Effectiveness of Modern Technology in the Intensive use of Paddy Lands

(A Case Study from the Kandy District)

J. M. GUNADASA

Introduction

Conceptually, intensification of land use is rational both from the point of view of resource conservation as well as economic use of available resources, especially in the context of a small country like Sri Lanka. Nevertheless, the wastage resulting from inadequate knowledge of the related process is likely to be considerable, particularly when a government is committed to a policy of intensive land use. In Sri Lanka, the pursuit of this policy since its wider recognition after the preparation of the Ten Year Plan, has led to the commitment of much resources and effort over the years. Though this effort has been rewarded in certain respects, intensive use of paddy lands needs greater attention, especially when it is put in the total context of overall national development.

When a farmer utilizes a relatively less efficient technology of production, despite the availability of more efficient ones, agricultural land use tends to be more extensive than intensive. However, even in the use of an efficient technology a farmer is likely to use more land than actually necessary to produce a given amount of output. This happens when inputs other than land are used in proportions less than the optimum determined in relation to a given production function related either to a traditional or a modern technology. Thus, the intensity of land use seems to vary in inverse proportion to the variation of the extent of land used to produce a given level of output. The underlying assumption is that the ecological conditions affecting the productivity of land are uniform over all areas. Needless to state that such an assumption is fallacious. On this basis the intensity of agricultural land use of areas manifesting two different types of ecological characteristics cannot be usefully compared.

Therefore, to study the intensity of agricultural land use more fruitfully it must of necessity be based on homogeneous agricultural regions. This indeed should be the approach that has to be followed in a comparative study meant to serve mainly as a basis for a comprehensive agricultural policy. The present study is no ambitious attempt of this sort. It only seeks to examine the intensity of paddy land use in relation to modern technology in an area where there is a great need for it. The focus is more on the identification of constraints which hinder the attainment of the technologically determined optimal level of intensity of paddy land use in the selected area.

Methodology

The study is mainly based on a field survey pertaining to the two cultivation seasons, Yala 1973 and Maha 1973/74. The survey was restricted to Udunuwara Medapalatha Uthura Agricultural Productivity Committee (APC) area located in the Udunuwara Assistant Government Agent's Division (DRO division) in the Kandy district [1]. Convenience for field work, interest shown by the APC members and the recommendation of the Assistant Director in charge of the APC's in the district led

to the choice of the area. It consisted of a total of 1,506 paddy plots [2]. All of them were included in the sample frame. Details relevant to this population (names, addresses and paddy plots, etc.) were obtained from the Paddy Lands Registers[3] maintained by the Cultivation Committees before their recent reconstitution [4].

In the Paddy Lands Registers the name and the serial number of the individual paddy plots is entered in the first column. All other information follows the order set by these first entries. Due to this same person's name, whether he is a landlord, owner, cultivator or tenant, appears more than once in the registers if he cultivates or owns more than one plot of paddy land. Thus, if the cultivator (going by his name) is treated as the unit of observation in the survey, revision of Paddy Lands Registers becomes necessary : for in this context a cultivator's name should not appear in the sample frame more than once notwithstanding the number of plots he may be cultivating. The method of treating the cultivator as the unit of observation, no doubt, has its merits provided the cultivators are able to supply the requisite information unambiguously and without confusion. However, the writer's experience both in three field surveys conducted earlier as well as in the pilot survey relating to the present one, is that this method has certain disadvantages especially in maintaining non-ambiguity and accuracy in the respondents' answers. The problem arises mostly when a cultivator cultivates more than one plot of paddy land. Normally, the cultural practices followed and the input proportions used in the different paddy plots tend to vary [5].

In a field survey such as the present one almost all the information collected comes not from regularly kept records but from the cultivators' memory. The survey was begun in October 1974 and completed in January 1975. There was thus, an interlude of six months to one year between the actual cultivation operations and the time of the interviews with the cultivators. It is no wonder then if the cultivators do not remember well what they did exactly during the two seasons under consideration here (Yala 1973 and Maha 1973/74), or still more show signs of confused memory regarding the practices followed and the input proportions used in the different plots. Weak memory and the inaccuracies resulting from it, of course, are unavoidable flaws in any survey of this kind. A field investigator, in the last resort, has to reconcile though unwillingly, to this situation. Nevertheless, it was thought that, to overcome the problem of confused memory the use of individual plots as units of observation is a more satisfactory approach. Accordingly, to draw the sample of respondents the particulars appearing in the Paddy Lands Registers were used without any alteration. As a result it is possible that a respondent gets into the sample more than once [6]; because the population as appearing in the registers is one of paddy plots and the other details are entered against each of them.

In selecting the sample the paddy plots were assigned numbers in consecutive order to serve as identification marks ; the names of cultivators were not used. To begin with an attempt was made to employ the technique of stratified sampling to select the sample of respondents. Strata were separated out on the basis of tenurial status, size of plots and the mode of water supply. In all, 18 strata could be identified. Unfortunately, the units falling within some strata were so few that equal representation could not be maintained in the sample. Strata containing two or three plots could not be represented at all if the respective cultivators could not be located due to reasons such as change of residence, death or change of ownership [7]. Finally, in view of these circumstances a simple random sample was selected. To include 10 per cent of the population 150 units of observation without the reserves, were selected.

But only 132 of them could be used for analysis as several questionnaires had to be rejected. The sample in effect therefore, consists of about 8 per cent of the population of paddy plots in the survey area (APC area).

Adoption of Modern Technology

The degree of intensity of paddy land use is closely tied up with the technology of production adopted. The choice lies between two distinct technologies of production, the traditional technology as against the modern one. The use of local varieties of seed, broadcast sowing, application of little or no manure, the use of as much water as is available to control weeds, the adoption of local practices like oil-charming, drum-beating with offerings made to deities to save a crop from pests and diseases and also the use of traditional equipment are taken to constitute the component practices of the traditional technology. The modern technology, on the contrary, is regarded to consist of the use of improved seeds, transplanting or row seeding, application of artificial fertilizers, use of agro-chemicals or manual labour for weeding, application of agro-chemicals to control pests and diseases and the use of modern machinery and equipment. Variations from these two distinct technologies can occur as a result of the continuation of traditional practices along with the modern ones. These only reflect the various stages of the process of diffusion of the modern techonology and hence are not treated as altogether new technologies.

The level of adoption of the modern technology was high in the survey area during both the seasons under consideration here, Yala 1973 and Maha 1973/74 (*See* table 1). On average, in more than 90% of the paddy plots the modern technology of production seems to have been used. Compared with the level of adoption of the modern technology in the whole Kandy district in the early 1960's (table 2) the position in the survey area is much advanced :—

TABLE 1 *

Percentage of paddy plots where the modern technology is used in the survey area

Season	*I.S*	*T. P.*	*A.F*	*W. D.*	*P. D.*	*M. M.*	*A V.*
Yala 73 ..	100 ..	98 ..	99 ..	96 ..	80 ..	00 ..	95 ..
Maha 73/74 ..	98 ..	99 ..	92 ..	87 ..	78 ..	00 ..	91

* Based on field survey data.

I. S. — Improved seed ; T. P. — Transplanting ; A. F.— Artificial fertilizers.

W. D. — Weeding by the use of either weedicides or manual labour. This unlike the rest is a percentage of only those paddy plots which had weeds.

P. D. — Pest and disease control by the use of agro-chemicals.

M. M. — Use of modern machinery and equipment (tractors, seeders and weeders)

A. V. — Average of the five practices (excluding the use of morden machinery. These are excluded due to two reasons : they do not contribute to yield increase and tractor cannot be used in the area due to its topographical characteristics.)

Here the last stage of the process of diffusion of the modern technology has already been reached. The levels of adoption of the individual practices seem to lend support for this supposition. In 98% or more of the plots the cultivators have used improved seeds and practised transplanting during both the seasons. Even the application of artificial fertilizers and weeding either manually or by the use of weedicides have been practised in more than 95% of the plots during the Yala. Pest and disease control is the least widespread of all the practices. Still, its level of adoption is more than 75%.

TABLE 2 *

Season	*I.S.***	*T.P.*	*A.F.*	*W.D.*	*P.D.*	*M.M.*	*A.V.*
Maha 1961/62 ..	— ..	45 ..	52 ..	58 ..	12 ..	07 ..	42
Yala 1962 ..	— ..	49 ..	60 ..	52 ..	04 ..	06 ..	41

* Based on the data of the *Census of Agriculture* 1962, vol. iii, pp.84 - 102.

** Figures not available.

Except W. D. the other symbols are same as in table 1. W. D. unlike in the table 1 is a percentage of the total extent shown.

The relatively lower level of adoption of fertilizers and weeding during the Maha appears to be due to a shortage of water ; the two practices could be effectively adopted only if water was available at the correct stages. Non-availability of water is the most critical factor that prevents farmers from following all the complementary practices. Lack of water at the correct stages again may be due to delayed sewing or transplanting. The causes for this however, are not identical with those in the dry zone areas. More than the uncertainty of rainfall, the shortage of farm implements, draught power and finances seem to cause delays in the cultivation operations of an area such as the one under study.

The lowest level of adoption of pest and disease control practises may be related to a lack of competence on the part of the farmers to identify pests and diseases in time. Non-availability of the right type of chemicals, spraying equipment and also finance could be the other causes. For more than 100 farmers there are only 5 knapsack sprayers. It is true that the co-operatives and the cultivation committees too own sprayers. But their service is not available in time : sprayers maintained by them are either in a state of disrepair or borrowed by others and not returned as required. Endrin, Polythion and Shelltox are the varieties of chemicals used in most of the plots (*see* table 3). But the pests that have affected most of the plots happen to be Bacterial Leaf Blight, Leaf Roller, Stemborer, Brown Spots and Bronzing (*see* table 4). For these the chemicals that should have been applied are Fenitrothion, Kasumin, Tuzet, Diazinon and B.H.C. granules etc. Nevertheless, except Fenitrothion, Malathion and B.H.C. applied over a small area, others have not been used at all. Either the right varieties of chemicals were not available or the farmers did not know about them. It is highly likely that both factors have been contributory.

TABLE 3

Percentage of plots where different types of chemicals were used

Variety of Chemical	*Yala*/73	*Maha* 73/74
Endrin	47	41
Polithion	22	12
Sheltox	3	21
Sumithion	5	12
Malathion	4	6
B.H.C.	4	1
Polidol	0	1
Others *	15	14

* This category includes the cultivators who used chemicals but were unable to give their trade names.

TABLE 4

Percentage * of plots affected with different types of pests

Plots	*Yala*/73	*Maha* 73/74
Leaf Blight & Leaf Roller	39	57
Stem Borer	12	07
Bronzing & Brown Spots	14	04
Brown Plant Hoppers & Thrips	07	03
Paddy Bug	03	00
Rats	02	01

* Percentage of the total number of plots.

Yield Performance

Taking into consideration both the opinions of the agricultural extension workers and the yields of some farmers in the survey area the modern technology if employed in accordance with the technological requirements should be capable of producing an average yield of about 100 bushels per acre. Nevertheless, the averages of actual yields received during the Yala and the Maha are only about 44 and 35 bushels per acre respectively. This is rather an anomalous situation in view of the average yield performance of the Kandy district over a period of 19 years (1952 to 1970). The average yields per acre during this period have been about 50 and 54 bushels in Yala and Maha respectively. The anomaly could be observed in two respects : firstly, the yield for the Yala is higher than that for the Maha ; and secondly, the yields for both the seasons are lower than those of the whole district by an average of about 24% (12% for Yala and 35% for Maha). One of the reasons for this discrepancy may be either the over-statement of the estimates based on crop-cutting surveys used to compile the district yield data by the Department of Census and Statistics or the under-statement of the yields

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by the respondents from whom the data pertaining to this survey are collected. Both these causes may have been contributory to a greater or lesser extent. Since the survey area is ecologically very favourable to paddy production and also since the modern technology is widely practised in it, another possibility for the lower yields is that the weather conditions in the survey area during the two seasons under study may have been unusually unfavourable. Though some paddy plots have suffered from a shortage of water during the Maha its effects alone are unlikely to lower the yields so much. Instead the defective use of inputs related to the modern technology appears to be a more plausible cause for the shortfalls in yields.

TABLE 5

Frequencies of yields per Acre

Class Interval (*Bushels*)	*Yala* 1973 *No. of Plots*	*Percentage*	*Maha* 1973/74 *No. of Plots*	*Percentage*
0–10	.. 3	2..	3	2
11–20	.. 6	5..	18	4
21–30	.. 15	12..	22	17
31–40	.. 38	30..	27	21
41–50	.. 26	21..	24	19
51–60	.. 13	10..	16	13
61–70	.. 6	5..	4	3
71–80	.. 3	2..	3	2
81–90	.. 4	3..	0	0
91–100	.. 3	2..	2	2
More than 100	.. 8	6..	7	6

Causes for Low Yield Performance

The low yields could partly be explained in terms of the damage to the paddy crop in the area. An estimate of the damage resulting from the four causes,—excess water, shortage of water, weeds and pests and diseases was made on the basis of the respondents' own assessment (a very rough approximation no doubt). On average this amounted to 26 bushels per acre during both the seasons ; a loss of more than 50 percent. of the average yields (*see* Table 6). Pests and diseases account for half of this

TABLE 6

Average loss of Yield per Acre Due to different Causes

Cause	*Yala* 1973 *Bushels*	*Percentage*	*Maha* 1973/74 *Bushels*	*Percentage*
Pests & Diseases	.. 13	.. 50..	14	.. 54
Weeds	.. 6	.. 23..	5	.. 19
Shortage of Water	.. 5	.. 19..	5	.. 19
Excess of Water	.. 2	.. 8..	2	.. 8
Total Loss	.. 26	.. —..	26	.. —

loss. This is somewhat surprising in view of the attention paid to pest control. Almost all the plots affected with pests and diseases have been treated with agro-chemicals. The plots which were not so treated do not exceed 3 per cent (*see* Table 7). On the contrary 7 per cent of the plots were treated with chemicals even though they were not subject to any pest attacks. Chemicals have been sprayed twice to more than 40 per cent of the plots and the average quantity applied has amounted to about 23 to 26 ounces per acre. From this it appears that firstly, most of the farmers in the survey area have failed to diagnose the pests and diseases at the correct stage and secondly, as already pointed out earlier, the treatment is also defective. The former may be due more to incomplete knowledge and skill while the lattercould be a result of both the incomplete knowledge as well as the shortcomings of the supply services. Agro-chemicals at the time of the surveys, were expected to be sold both by co-operatives and by the private traders. Often the required varieties of chemicals were not available with them. Sometimes both the co-operatives and the private traders were saddled with old stocks of chemicals which these institutions tried to clear off somehow. It is possible that this too contributed in some measure to faulty pest control practices by the farmers. This looks like a pointer to the need for a different approach to integrated extension and supply services either through institutions or registered private dealers. The urgency of such an alternative course of action is seen when the possible yield improvement by reducing losses from pests and diseases is taken into account. In the survey area the average yield would have risen by an additional 13 bushels making it 57 bushels in the Yala and48 bushels in the Maha.

TABLE 7

Number of Plots where different methods of weed control were practised

Method of Weed Control	*Yala* 1973		*Maha* 1973/74	
	Number	*Percentage*	*Number*	*Percentage*
Plots with weeds	.. 103	81 ..	104	81
Plots where weeding is done	.. 99	96*..	90	87*
(*a*) By hand	.. 98	95*..	90	87
(*b*) With weedicides	.. 01	0 9*..	00	00
Unweeded Plots	.. 05	4 8*..	14	13*
No data	.. 05	—	03	—

Since weed growth and shortage of water are two related phenomena, taken together these two causes of crop damage came next in importance in the survey area. The estimated damage due to these two causes is around 10 bushels accounting for about 40 per cent of the total loss. Almost all the paddy plots in the survey area were transplanted. It is one of the ways in which weed growth could be reduced. If there is sufficient water after transplanting weed growth can be completely arrested. But paddy plots in some locations have suffered from a shortage of water after transplantation. Though there are some minor irrigation facilities, all paddy plots are not fed by them. A dry spell is capable of drying up even the sources of minor irrigation water. It may be due to this that as much as 81 per cent of the transplanted plots were affected by weed growth (Table 7). About 5 per cent of these in the Yala and 13 percent in the Maha were not weeded at all. The scarcity of water at the critical stages may be due to delayed transplanting. Although the shortage of implements, draught

* Percentage P of the total number of plots with weeds.

power and finances can cause such delays indirectly in an area such as the one under study, a readjustment of the timing of the cultivation operations is unlikely to reduce the loss resulting from the shortage of water and weeds. Improvement of irrigation facilities is a more enduring long-term solution.

TABLE 8

Percentage of Plots affected with different Varieties of Weeds

Vairety of Weed	*Yala* 1973	*Maha* 1973/74
Isachn Globesa (Batadella)	67 ..	68
Monochoria Vaginalis (Diya Habarala), Limnocharis Flava (Diya Gowa), Klugia Notoniana (Diyanilla)	24 ..	22
Fimboistylis Miliaco (Kudumetta)	47 ..	50
Aonschynomom Indica (Diyasiyambala), Oschanemum Rogosum (Gejarawalu)	10 ...	26
Cyperus Iria (Thusessa)	08 ..	06

As a short-term measure, while not discouraging the use of manual labour in weeding, it may be desirable to concentrate on the feasibility of checking the spread of the common varieties of weeds found in the survey area (*see* Table 8) by introducing some effective weedicides even at subsidized rates; because there is a chance of increasing the yield by about another 10 bushels (more than 22 per cent of the prevailing yield). During the two seasons considered here almost all the plots were weeded manually. But the labour days spent on weeding during both the seasons have been only about 6 to 8 days per acre (Table 9). For the yields to have been lowered by more than 22 per cent the weed growth appears to have been thick. If so 6 to 8 days of labour input is hardly adequate for effective weed control. Some varieties of weeds may be more effectively controlled by the use of weedicides. If the loss due to weeds and shortage of water could be reduced along with that due to pests, the average yields would have risen to 67 to 58 bushels per acre during the Yala and Maha respectively. Excess of water has not been a significant cause of crop damage in the area.

TABLE 9

Break-up of Labour Inputs according to different Items of Work

(in labour days per acre)

Item of Work	*Yala* 1973	*Maha* 1973/74
Land preparation	27 ..	22
Transplanting	27 ..	22
Weeding	08 ..	06
Threshing	09 ..	08
Others*	30 ..	24
Total ..	101	82

*Others include labour days spent on the application of fertilizers, agro-chemicals, water management, & bird-watching, etc.

Crop damage alone cannot explain satisfactorily the shortfall of yields. Though BG/11/11 and LD 66 are the new improved varieties recommended for Maha in the area, they were cultivated only in 50 percent. of the plots (Table 10).

TABLE 10

Percentage of Plots cultivated with different Varieties of Seed Paddy

Variety of Seed Paddy	*Yala* 1973	*Maha* 1973/74
BG/11/11	42	48
H 4	39	24
H 501	05	13
H 7	07	02
H 8	02	06
HR 8	02	03
LD 66	03	02
Local Varieties	00	02

The old improved varieties were cultivated in the rest of the area. Out of these H 4 has been more popular than the rest. The position in the Yala was similar to that of the Maha except for the fact that there is a slight increase of the plots cultivated with the old improved varieties. This is natural since the Yala preceded the Maha and more cultivators may have begun to use the improved varieties in the subsequent season, i. e., Maha 1973/74.

Though according to the recommendation the farmers should have used three months or three-and-half month varieties like BG 34/8 and BG 34/6 during the Yala they had not been used in any of the plots. Instead, in about 80 percent. of the plots H 4 and BG 11/11 were cultivated in the Yala too ; these are four to four-and-half month varieties. In the use of the improved varieties of seed paddy the general level of performance in the survey area cannot be regarded as unsatisfactory. However, it shows that the second wave of the diffusion process has not so far swept across the area. Nevertheless, the short-fall of yield cannot be attributed so significantly to the varieties of seed used.

For the improved varieties of seed such as BG 11/11 and H 4 the amount of fertilizers recommended per acre during any season is 364 lb. (Vs 168, Urea 84 and T. D. M1 112). But the actual quantities applied during the Yala and the Maha on average were 259 and 236 lb. respectively ; these indicate short-falls of 105 and 128 lb. Besides the shortfall in the overall amount, the fertilizers also have not been applied in recommended proportions. While Urea was applied in more than 80 percent. of the plots V2 and T. D. M1 were used in less than 60 percent. of them (Table 11). Potash, Ammonium Sulphate, cowdung and other varieties also have been used in 4 to 13 precent. of the plots reflecting the continuation of the older fertilizer recommendation alongside the newer one.

In more than 20 percant. of the plots, according to some respondents, "mixed fertilizers" were used. This is a reference to either V2 or T. D. M1. All this shows a certain degree of confusion in the cultivators' minds regarding the proper use of fertilizers. While in 6 percent. of the plots were Ammonium Sulphate had been applied, nitrogon was used in more than 90 percent. of the plots

The percentage of plots where V2 and T. D. M1 were applied is less than that where Urea and Ammonium Sulphate were used. Similarly, in 12 percent. of the plots only nitrogen has been used. Thus, there is an obvious imbalance in the addition of fertilizer nutrients to the soil ; imbalance being created by a relatively larger proportion of nitrogen. This adequately explains the high incidence of pests and diseases discussed earlier. Pests had affected 72 percent. and 68 percent. of the paddy plots during the Yala and Maha respectively. It is noteworthy that higher pest incidence during the Yala shows some correlation with the greater percentage of plots where nitrogen was used during the same season (Table 11). A further shortcoming in the fertilizer practice can be observed in relation to the number of times of application. Though it is necessary to apply fertilizers at least three times for a crop at the specified intervals this requirement seems to have been followed only in 42 percent. and 50 percent. of the plots during the Yala and the Maha respectively.

TABLE 11

Percentage of Plots where different varieties of Fertilizers were used

Variety	*Yala* 1973	*Maha* 1973/74
V 2	38 ..	44
Urea	89 ..	85
T. D. M1	53 ..	55
Mixed Fertilizers	24 ..	20
Ammonium Sulphate	06 ..	06
Potash	04 ..	04
Cowdung	10 ..	12
Others	06 ..	13

The level of labour use in the area does not deviate much from the average for the whole district. According to the Central Bank survey conducted in the Maha Season of 1966/67, average man-days used per acre amounts to about 108 when the fields are transplanted (81 in broadcast sowing). In the survey area 101 and 82 man-days of labour have been used during the Yala and the Maha and almost all the fields were transplanted. In view of the inherent problems in the assessment of labour inputs the difference between the two sets of figures cannot be taken so significantly. Generally in most areas of the Kandy district, including the survey area, paddy cultivated is more labour intensive than in other parts of the island. This is primarily due to the more widespread adoption of the modern technology which includes, besides others, manual weeding and transplanting. Nature of the topography in the district also contributes its share by compelling the farmers to use labour intensive techniques in tillage. In the survey area there was not a single instance when tractor was used either in preparatory tillage or in threshing. Particularly noteworthy is the rather low level of labour use in weeding (Table 9).

The proportion of paid labour in the area exceeds one-third of the total labour inputs (Table 12). The use of family labour and attan-labour seems to prevail in equal proportions. This shows the insufficiency of family labour in paddy cultivation though the average size of about 80 percent. of the paddy plots is even less than 0.5 acres (Table 13) and on average a family consists of 5 persons within the age group 15 to 60 years.

TABLE 12

Division of Labour into Different Categories

(in labour-days per acre)

Category	*Yala* 1973 Number	%	*Maha* 1973/74 Number	%
Hired Labour ..	38	38	30	37
Attan Labour ..	29	29	24	29
Family Labour ..	34	33	28	34
Total ..	101		82	

TABLE 13

Size Distribution of Paddy Plots

Size Class	*Yala* 1973				*Maha* 1973/74			
	1	2	3	4	1	2	3	4
Less than ½ Acre ..	14	51	40	0.27	16	51	40	0.31
½ to 1 Acre ..	27	48	38	0.56	29	47	37	0.61
More than 1 Acre ..	33	28	22	1.17	41	30	23	1.36
Total ..	74	127	100	0.58*	86	128	100	0.67*

(1) Extent in acres ;
(2) Number of plots ;
(3) Percentage of plots ;
(4) Average size of a plot ;

*Average size of all the plots.

*Labour provided on the basis of mutual help.

Need for Further Agrarian Reforms

Although the level of input use is relatively high, borrowing for paddy production in the area is very low. Borrowed funds have been used to cutlivate only 13% and 7% of the plots in the Yala and the Maha respectively ; the average amount borrowed per acre being Rs. 291/ during the former and Rs. 228/ during the latter. The average size of the plots for which credit was obtained is just over ½ acre. For the cultivation of plots less than this size borrowing has been even less than 25%. It seems to suggest that farmers are more disposed to borrowing when the size of land holding is sufficiently large to produce a marketable surplus. With improvements in technology even smaller holdings are capable of producing such surpluses. In the survey area, with a higher level of adoption of the modern technology, even holdings smaller than in other areas seem to be adequate to produce a surplus.

Another significant characteristic of borrowing in the area is that 60% to 70— (Yala & Maha) of the borrowers are owner cultivators. Institutional credit plays a marginal role ; only 30% to 33% (Yala & Maha) of the borrowers have borrowed their funds from the co-operatives. Out of the total cultivator population in the sample they account for less than 3%. What emorges from this is that smaller size and tenancy in the survey area directly militate against the use of credit. This in turn affects indirectly the use of proper input levels. If so does it point to the need for further agrarian reforms aimed not at decreasing holding size but increasing, it may be both by land consolidation and also by elimination of the undesirable forms of tenure ? The significance of the latter may be observed further by reference the figures in table 14. Out of the total number of plots in the sample, 36% are worked by tenants. Only less than 37% of them give $\frac{1}{4}$ share to the landlord as required by the Agricultural Lands Act. As much as 43% to 58% still continue the old practice of giving $\frac{1}{2}$ share (hari ande) to the landlord.

Level of input use and management are, to a certain extent, dependent upon transport distances between farmsteads and paddy plots and farmsteads and co-operatives or farmsteads and nearest service centres.

TABLE 14

Percentage* of Tenants giving Respective Shares to the Landlords

Share of the Yield	*Yala* 1973	*Maha* 1973/74
$\frac{1}{4}$	36 ..	09
$\frac{1}{2}$	58 ..	43
Between $\frac{1}{4}$ and $\frac{1}{2}$	02 ..	33
More than $\frac{1}{2}$	04 ..	15

*Percentage of the total number of tenants (45 in Yala and 46 in Maha).

By looking at the table 15 it can be seen that this is unlikely to be a factor discouraging the use of new inputs as recommended. In 95% of the cases the distance between the homestead and the paddy plot is less than half mile. In 95% and 80% of the cases the distance from the homestead to the nearest co-operative and the nearest service centre respectivey is less than 1 mile.

TABLE 15

Percentage of Plots with Different Distances from the Farmstead to the Paddy Plots, the Nearest Co-operative and the Nearest Service Centre

Distance	*Plot*	*Co-op*	*Ser. Centre*
Less than $\frac{1}{4}$ mile	75 ..	50 ..	44
$\frac{1}{4}$ to $\frac{1}{2}$ mile	20 ..	29 ..	25
More than $\frac{1}{2}$ to 1	05 ..	16 ..	11
More than 1	00 ..	05 ..	20

Basic to the adoption of any recommended technology and the related input levels is the incentive of net returns. Estimates of these for the survey area were made on a per acre basis using the average levels of inputs applied and the prices that prevailed during the two seasons under consideration (see table 17 and Appendix I for details of the method of estimation). According to this estimate the net return after deducting all cash expenses work out to Rs. 739.46 for the Yala and Rs. 493.39 for the Maha. As Chayanov rightly points out this is an aggregate return on all factors of production, land, capital family labour and management. It is not possible to disaggregate this into the respective components of reward for each factor of production as there is no readily identifiable market price for each of them. Nevertheless, as conventionally done if the whole amount is assumed to be a return on family labour the reward for a family labour-day seems to be in the region of Rs.10.00. This is comparable with the going wage rate of hired labour in the area. Therefore, farming one's own paddy lands is not more advantageous than hiring out one's labour to farm another person's paddy lands. The latter however, is certainly more advantageous to all the tenant farmers irrespective of the share given to the landlord. The greater the share given to the landlord the more advantageous it is for a tenant to hire out his labour than cultivate his landlord's paddy lands. Yet for all, let alone the owners, not even a single tenant farmer abandons the cultivation of whatever paddy lands taken on *ande** from the landlords.

If the cultivations are abandoned alternative employment capable of earning a higher income has to be found elsewhere in order to purchase rice at the market. The market price of a bushel of paddy is normally higher than its cost of production incurred by either a tenant or an owner farmer. In the survey area the cost of production of a bushel of paddy was Rs. 16.19 in the Yala and Rs. 18.90 in the Maha. Contrasted with this the guaranteed price and the open market price was Rs. 33.00 and Rs. 44.00 respectively. The open market price of a bushel of paddy was even more than twice its cost of production. In a context of structural unemployment and subsidized production within a traditional framework of farming characterized by undesirable tenurial practices and farm holdings whose size is hardly adequate to produce even the food needs of the farm family it is perfectly rational cultivator behaviour to continue with this seemingly uneconomic family labour use in paddy production. It is also equally rational behaviour if these farmers do not borrow from recognized credit institutions for the purpose of paddy production. For, as much as the lending institutions expect, the farmers are also aware that borrowed funds have to be repaid with an interest of at least 9%. Taking the average position of production in the survey area (see tables 16 and 17), a farm family has to borrow

TABLE 16

The Average Use of Inputs and the Average Yield Per Acre

Inputs	*Yala* 1973	*Maha* 1973/74
Seed (Improved) ..	.. 1.8 bushels	.. 2.3
Fertilizers ..	.. 259 lbs.	.. 236
Agro-chemicals ..	.. 23.7 ozs.	.. 26.5
Labour-days ..	.. 101	.. 82
Yield ..	.. 44 bushels	.. 35

* Traditional system of renting out paddy lands to tenants.

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TABLE 17

Net Returns per Acre in the Survey Area*

Item of Expenditure	*Yala* 1973	*Maha* 1973/74
	Rs. cts.	*Rs. cts.*
Seed	9 00 ..	115 0
Fertilizers	166 92 ..	149 40
Agro-chemicals	30 36 ..	33 95
Hired labour	328 0 ..	266 0
Acreage tax	3 0 ..	3 0
Transport	10 0 ..	10 0
Cost of Implements	5 26 ..	5 26
Maintenance of Implements ..	4 0 ..	4 0
Buffaloes	75 0 ..	75 0
Total Cash Expenditure ..	712 54 ..	661 61
Gross return	1,452 0 ..	1,155 0
Net return (to family labour) ..	739 46 ..	493 39
Return per family labour-day ..	11 74 ..	9 49

*See also Appendix I for details of estimation.

about Rs. 700 to cultivate one acre of paddy. At the end of the season (i.e. in six months' time) Rs. 731.50 has to be repaid along with interest at 9%say to the co-operative society. For this at the guaranteed price of Rs. 33 a bushel, 22 bushels of paddy have to be sold to the co-operative. If the average yield per acre in the Yala (44 bushels, the highest out of the two seasons) is taken, the amount that is left over with the farm family for consumption until the next harvest, which may not be too sure, is only 22 bushels ; and this for a 6-month period. But the consumption requirements of the average farm family for this period, amounts to about 41 bushels (see Appendix II for details of this computation). Bearing in mind the quantity of rationed rice available during the six month period, the total quantity of rice available for consumption by the farm family amounts to 30 as against the total need of 41 bushels. Still there is a consumption gap of 11 bushels for the season. A farm family would not face this deficit if paddy is not sold to the co-operative to settle a loan. But if a loan is taken either 11 bushels of paddy or some other substitutes have to be purchased from outside if the farmer is unable to grow substitutes like yams and manioc by himself. Even if the latter possibility exists farmers prefer to eat rice and it is more economical too in comparison to substitutes like bread. Under these circumstances assuming that paddy would be purchased from outside to fill in the consumption gap, a farmer has to pay an extra Rs. 11 for a bushel of paddy at the open market rate of Rs. 44. When the open market price rises farmers' extra expenditure rises further. This can be saved if paddy is not sold to the co-operative to settle the loans. The small farmer who does not produce enough for his family consumption is fully aware of this commitment when others persuade him to borrow from lending institutions. Thus, many of them are reluctant to yield themselves to such persuasion. They are the type who want to be honest but unwilling to pay a price for it. However, some farmers accept the good advice to borrow. They happen to be either those who can produce more than their family consumption needs or those who do not mind being dishonest after borrowing. (Often the farmers falling into the latter category seem to be rewarded especially when unsettled loans are written off.)

However, the fact that even small farmers do borrow need not be forgotten simply under cover of the above argument. The borrowings of small farmers are mostly small and from conventional sources such as friends and relatives. In this instance farmers see to it that their obligation to settle such loans does not become an unbearable burden on their harvest. In this eventuality, the small amounts borrowed from conventional sources should be hardly adequate to propagate the modern technology of production. This however, does not appear to be such a formidable constraint in the survey area ; because, besides paddy, there are other sources of cash income. For more than 50% of the males paddy farming is a part-time occupation. Then are we to infer from this that part-time farming is desirable and should be even encouraged in a context where land reform measures for land consolidation or for increasing the size of farm holdings are not implemented ?

Conclusion

Though the modern technology in paddy production is widely known and practised in the survey area, all practices related to the new technology are not effectively followed. Particularly defective are the application of fertilizers and the control of pests and diseases. These appear to be the second-generation extension problems. Superficially, the remedial measures seem to come within the second stage of agricultural extension since the first-stage task of making the farmers familiar with the revelant innovations has already been attained in the area. However, to probe a little deeper into the problem one needs to examine whether it is due to the inadequacy of extension service provided by the government and the consequent imperfection of farmers' knowledge in the use of new technology that defective practices prevail.

As could be seen a fair number of cultivators were not familiar with the names of different varieties of fertilizers. Their own terminology seems to have been used intechangeably for the different varieties. This may have contributed to faulty fertlizer practice. The use of colloquial terms as trade names for the different varieties of fertilizers and chemicals could be one of the remedies for this problem. Such terms may be selected to show the possible association with the relevant farming practices. On the other hand it is hard to imagine that farmers in an area such as the one considered in this, study are so ignorant of the correct fartilizer practice. Presuming that they are not ignorant of this, the other causes are either the defective supply services or the low returns on the extra application of fertilizers. The latter the farmers may have come to know through their own individual experiences. These two causes however, do not seem to be so significant. Nevertheless, that extension programmes need to be tailored to push production not only in conformity with the new technological knowledge but also to ensure economic returns to cultivators and on invested resources bears relevance in this context.

Reduction of crop damage is another line of policy that has to be pursued. A loss of 25 bushels per acre is a considerable waste. Out of this too a loss of more than 50% due to pests and diseases is alarming. Developing farmers' ability to diagnose pests and diseases accurately and in time seems to need specific attention in the area. It is also doubtful whether the farmers are using the right kind of chemicals for the different pests and diseases. Nor can one rest content with the supply services. By way of an attempt to improve the supply services only registered agents should be allowed to sell the agro-chemicals. Both the co-operatives and the registered dealers may be used effectively to do a certain amount of extension work. They even could be held responsible for the sale of chemicals and fertilizers not recommended.

Labour use in weeding does not appear to be adequate. While not discouraging the use of manual labour it is worth while exploring the possibility of using some effective weedicide to control the varieties of weeds which cannot be eliminated successfully through manual weeding.

The non-availability of institutional credit has not restricted the use of the modern technology in the survey area. In an area such as this it is undesirable to attempt to pump in institutional credit without the accompanying land reform measures. Even without institutional credit there is sufficient incentive to produce more by adopting a more efficient technology since the cost of consumption through production is substantially lower than the market price of paddy. No doubt these observations are specific to a certain restricted locality in the Kandy district. Nevertheless, the likelihood of their wider applicability especially in the context of other densely populated agricultural areas cannot be altogether ruled out.

APPENDIX I

1. *Improved Seed.*—The price of improved seed (BG/11/11, LD 66 and H4 etc.) is Rs. 50 a bushel as fixed by the Department of Agriculture. (Since the 1st of March, 1976, this has been reduced to Rs. 45).

2. *Fertilizers.*—The cost of fertilizers was calculated as follows. The recommended amounts of the different varieties of fertilizers for the area (i.e., V2 168 lbs., Urea 84 lbs., and T.D.M. 112 lbs.) were first multiplied by the actual number of users of the respective varieties. This was done on the assumption that the actual number of users applied the recommended dosages. On this basis the percentage of the total amount of fertilizers under each variety was estimated as shown below :—

(i) Variety of fertilizers	V 2 ..	Urea ..	T.D.M. 1
(ii) Recommended dosage	168 ..	84 ..	112 lbs.
(iii) Actual number of users in Maha ..	54 ..	105 ..	68
(iv) Total quantity assumed to be used during Maha	9,072 ..	8,820 ..	7,616 lbs.
(v) Percentage of each variety	35 ..	35 ..	30
(vi) Actual number or users in Yala ..	47 ..	111 ..	66
(vii) Total quantity assumed to be used during Yala ..	7,896 ..	9,324 ..	7,392 lbs.
(viii) Percentage of each variety	32 ..	38 ..	30
(ix) Percentage of each variety according to the recommendation	46 ..	23 ..	31

The average amount of fertilizers actually used per acre in the survey area during the Maha and the Yala were multiplied by the percentage given under Nos. (v) and (viii) above to estimate the average amounts of fertilizers under each variety actually used per acre in the survey area. This method of computation was employed as the actual amounts of fertilizers used could not be identified in terms of the different varieties.

According to this computation the average amounts of fertilizers used per acre consist of the following proportions :—

Varieties of Fertilizers	*Yala* 1973	*Maha* 1973-74
		Lbs.
V 2 ..	83 ..	82
Urea ..	98 ..	83
T. D. M. 1 ..	78 ..	71
Total	259	236

To arrive at the cost of fertilizers the amounts shown above were multiplied by the following prices :—

		Rs.	
V 2 (1 cwt.)	..	34 75	Price at the Co-op.
T.D.M. 1	..	82 00	
Urea	..	99 70	

(After price reduction the prices of these before reaching the Co-ops. are Rs. 25.85, 58.50 and 76.15 respectively)

3. *Agro-chemicals.*—The cost of agro-chemicals was calculated at Rs. 20.50 per 16 ozs. This was the price of chemicals like Endrin and Malathion used mostly in the area.

4. *Labour.*—In the estimation of labour the following facts were taken into consideration : In the survey area the female labour is employed mostly in weeding and transplanting. During the Maha this accounted for 28 labour days. The remaining 29 were man days. During the Yala the woman days were 34 and man days were 36. In the survey area the wage rate was Rs.5 per man day and Rs.3 per woman day.

In addition to this cash payment, food consisting of breakfast, lunch and afternoon tea, has to be provided. This is likely to cost an amount equivalent to the daily cash payment. At this rate the total cash outlay amounts to about Rs. 10 per man day and Rs.6 per woman day. However all the labour employed in paddy cultivation in the area is not hired labour. It accounts for only about 38% of the total labour input. The proportion of female labour is 34% of the total.

5. *Acreage Tax.*—Rs. 6 per acre per year.

6. *Transport Cost.*—Fertilizer is the most significant item of transport in the area. The transport cost therefore tas been calculated only for this item. The average amount of fertilizer applied is around 2 cwts. and the distance hetween the Co-op and the paddy plots of most cultivators is about 1 mile or less. To carry 1 cwt. of fertilizer 1 mile on beadload at least Rs. 5 may have to be paid. It is on this basis that Rs. 10 as transport cost has been arrived at.

7. *Implements, their Maintenance and Buffaloes.*–The costs of these were based on the estimates of Central Bank Survey of 1969. According to this survey the average costs of implements, their maintenacne and buffaloes were. estimated to be Rs. 2.63, 1.91 and 37.76 respectively. These were doubled to allow for the price increase since 1969

8. *Gross Return.*—The total yield was multiplied by Rs. 33, the guaranteed price of a bushel of paddy.

APPENDIX II

The total population coming within the sample amounts to 930 persons. According to the survey data, about 486 measures of rice are needed per day to feed this population adequately. The average family of the area consists of seven members. On this basis, the daily consumption need of rice of the average family is 3.6 measures. The annual seed then works out to 1,314 measures or 41 bushels of rice. The paddy equivalent of this is 82 bushels. For a season therefore a family needs 41 bushels of paddy for consumption (i.e. for a period of 6 months).

Notes and References

1. Udunuwara AGA or DRO division coincides also with the Udunuwara electorate and the area of operation of the Multi-purpose Co-operative Society. This DRO division is divided into five Village Committee areas : Ganga Palatha Uthura, Ganga Palatha Dakuna, Meda Palatha Uthura, Meda Palatha Dakuna and Kandu Palatha. The area of an APC is carved out to coincide with that of a Village Committee. The area of operation of a reconstituted Cultivation Committee is made to coincide with that of an electoral ward of a Village Committee.

2. The total number of paddy plots were distributed as follows :—

Name of the Cultivation Committee	*No. of Paddy Plots*
(1) Rangama (Siyambalagoda)	180
(2) Embekka (Meddegoda)	122
(3) Arawwawala	107
(4) Hiyarapitiya	79
(5) Imbuldeniya (Thirappuwa, Hiyawala, Walgama) ..	163
(6) Rabbegamuwa	120
(7) Deliwala	111
(8) Pamunuwa (Mugatiyapola)	60
(9) Gadaladeniya (Piligama)	118
(10) Hepana (Warakagoda)	113
(11) Kiriwalula	104
(12) Hiddaula	168
(13) Ganguldeniya (Haladiwela)	61
Total ..	1,506

3. The Paddy Lands Registers contain the following information : year of revision, name of village, name and serial number of paddy tract, name of field to be written according to the lie of the land, whether the field is subject to thattumaru or any other form of joint cultivation, extent of paddy land worked under major and minor irrigation schemes or rainfed conditions, owner cultivator, tenant cultivator, collective farmers, landlord with agricultural labourers, name of landlord, amount of irrigation tax payable, amount of acreage levy payable and the notes regarding the amendments to the register during the course of the year before the annual revision is made. Although the registers are required to be revised at the beginning of every year, when this survey was undertaken in August 1974, the registers were revised last in 1971 ; some had not been revised after 1970. Probably, this lapse may have been due to the impending change over of the Cultivation Committee set-up to the APC Organisation.

4. The older Cultivation Committees were formed under the Paddy Lands Act of 1958. These are being reconstituted under the Agricultural Lands Law, No. 42 of 1973.

5. The writer has come across situations where such variations were observed in the same paddy plot.

6. In the present sample there was only one of such cases.

7. In fact problems of this sort had to be faced in the course of the survey.

8. At least in 6% of the paddy plots in the survey area, yields more than 10 els per acre have been achieved during both the seasons (table 5).

9. Technological requirements/per acre according to the recommendations of the Department of Agriculture are as follows :—

Seed Paddy (BG/11/11, LD 66)	..	2 bushels
Method of planting ..	..	Transplanting
Fertilizers ..	..	V2 168, Urea 84 and T.D.M.1 112 lbs.
Weedicides ..	..	3/4 D.P.A. according to weed growth, at least 6 pints
Pesticides and Fungicides	..	3 per cent. carbofuran granules ; 2 lbs. to the nursery ; 20 lbs. 14 days after planting and another 30 lbs. after 50 days after planting. 20 lbs. of B.H.C. granules. 16 ozs. of Kasumin

10. J. M. Gunadasa, " A Review of Planning for Paddy Production in Sri Lanka, 1947 to 1970, " Modern Ceylon Studies, Vol. 3, No. 2, p. 190

11. This could be either pure chemical or its solution with water. It is not possible to place much reliance on this since the respondents' information in this respect was somewhat vague.

12. 3/4 D.P.A. is recommended as an effective weedicide for all kinds of weeds. But this was not used by any of the cultivators in the survey area.

13. The first wave of the diffusion of innovation consisted of the introduction of the old improved varieties of paddy. Relative to this the introduction of the use of new improved varieties of paddy can be regarded as the second wave of this diffusion process.

14. The other fertilizer formula as recommended by the Department of Agriculture was as follows :—

Urea ..	..	112 lbs.
Saphos phosphates	..	112 lbs.
Muriate of Potash..	..	84 lbs.

(*Fertilizer Recommendations for Rice Production*, published by the Department of Agriculture).

15. Application of fertilizers at three times is as follows :—

(i) Basal dressing	...	Before sowing
(ii) First Top dressing	..	4 weeks after sowing or 3 weeks after transplanting
(iii) Second Top dressing	..	10 weeks after sowing or 8 weeks after transplanting

(The above is mostly for 4 month varieties ; for 3 to 3 1/2 month varieties the first dressing should be applied 2 weeks after transplanting or sowing), Newsletter No. 7, 1973, p. 8, released by the Department of Agriculture).

16. Central Bank of Ceylon, Survey on Cost of Production of Paddy, Colombo, 1969.

17. Man days per acre vary in paddy production from one area to another ; see for example, ILO, *A Programme of Action for Ceylon, Technical Papers*, Geneva, 1971, p. 104 ; and also Summary Report of Socio-economic Survey of Nine Colonization Schemes in Ceylon 1967–68. Part II, Agricultural Economic Research Unit, Faculty of Agriculture, University of Ceylon, Peradeniya, 1969.

18. Normally farmers' working day varies from time to time depending on different circumstances ; there are no fixed working hours. A labour-day is likely to vary from even 2 to 3 hours to as much as 10 to 12 hours. In the present study labour time was estimated in hours and later converted to labour days by assuming the labour day to consist of 8 working hours.

19. Agricultural Lands Law, No. 42 of 1973.

20. The term service centre is loosely defined here to mean the nearest point at which provisions and some agricultural inputs like agro-chemicals could be purchased.

21. See for example, A. V. Chayan, *The Theory of Peasant Economy* edited by Daniel Thorner et. al. (Richard D. Irwin, Inc. Homewood, Illinois, 1966).

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Confession of an Organizational Change Agent

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This is an account of errors made by the author in his role as organizational change agent working as a process consultant. For each error there is an illustrative case study in which he was directly involved. Although some of the case studies could be used to illustrate more than one error, this is avoided in order to provide more examples. The errors include initiating change from the bottom up, creating a change overload, raising expectations beyond what is possible, allowing inappropriate attachment, becoming trapped in one part of the organization, changing only a sub-system, inappropriately using behavioural interventions instead of structural interventions, losing professional detachment, assuming that a change is needed, and failing to seek help.

There are many book-length case studies of organization development (OD) interventions (Argyris, 1971 ; Daumer, 1969 ; Mann, 1961 ; Rice, 1963 ; Sofer, 1962), and there are many prescriptions concerning the consultants role (Argyris, 1961 ; 1970 ; Boehme, 1956 ; Burke, 1971 ; Bowman, 1959 ; Covner, 1947 ; Ferguson 1968 ; Gibb and Lippitt, 1959 ; Schenin, 1969). In spite of this extensive literature, however, most writing on organization development does not include explicit discussions of actual errors. Some authors go as far as to suggest that if the client is dissatisfied with the assistance the consultant provides, the client has only itself to blame (Tilles, 1961 ; Woody and Woody, 1971). Examples of errors do exist, however. These include failure to understand why a client relationship deteriorated (Symposium, 1964, pp. 114–119) ; change overload and discrepant value, and changing a sub-system when the top man is not involved (Bennis, 1966, pp. 152–165). Beckhard (1969, pp. 93–96) has produced a list of twelve reasons for OD failure.

Bottom-up Change

When change agents tell me that they plan to attempt a change from the bottom up, I remind them of the military dictum that the penalty for mutiny is death.

In 1959, I was a consultant to a company team that was planning a change program for a twenty-thousand-employee firm. The budget was enormous. We planned a series of ten-month-long residential seminars for thirty managers each. The entire top management was to attend, except for the nine-man top team. The first week of the seminar was a T-group ; the second covered social issues, on which prominent journalists and activists spoke ; the third was on planning and organizing and the fourth was on objectives. The quantity and intensity of the post-seminar reactions were the highest I have experienced. After three of the ten seminars had been conducted, the top team cancelled the allocated budget, and the program was abandoned. What had happened was the successive waves of managers with radically changed ideas of how the company should be run were causing a tremendous disturbance, and we had made no preparation to enable the top team to deal with it.

I am frequently pressured by clients to make this error again but, recently at least, have not done so. The person who makes the request usually explains that the top man is too busy to attend a seminar, does not need it,or could simply read the book. Sometimes I am asked to just speak to him for a couple of hours. I have an armament of counter–arguments and sometimes, shamelessly.

I even suggest that the top man should attend an unfreezing seminar for symbolic reasons. Beckhard (1969) touches on a related type of problem that can be avoided by commitment and participation on the part of the top team ; " a continued discrepancy between top management statements of values and styles and their actual managerial work behaviour " (p. 93). Bennis (1966, pp. 157–160) gives an example of this error.

Creating Change Overload

It is often easy to create more change than a system can cope with conveniently, thus creating a change overload.

I once held a four-day, team-building meeting with the top team of a food processing company that employed one thousand people. The company had experienced no real change in the previous decade. Our discussion centred on the organization chart, and it was agreed that we would reorganize the top one hundred positions in the company. This was easier said than done. The two most powerful men on the top team were highly rigid, and in implementing the change, grew more and more authoritarian. What was designed as a healthy programme of evolutionary change deteriorated into a disguised rearrangement and a program to write more detailed job descriptions.

It is difficult to predict the occurence of change overload, even though the potential for creating it can be high. The most rigid systems are most likely to experience overload because they are the ones least equipped to handle change. The change agent who has a continuous interface with the client should be able to identify the possibility of change overload and help the client avoid it or adjust to it. If, however, the change agent's role is to " drop in again when you are in town, and let's have another team meeting in a year or so ", this potential problem is difficult to monitor. I tend to avoid change overload now by requiring a continuous association between myself and the client and by avoiding single interventions. Bennis (1966, pp. 153–155) refers to a similar error.

Raising Expectations beyond what is Possible

Perhaps the easiest error to commit in organization development is to raise expectations beyond what is possible.

The top man of a government department decided to introduce Management by Objectives (MBO) by participative means. At my suggestion, we had a meeting to discuss it. Several errors had already been committed at this point. MBO, certainly in the traditional format, is not suitable for most government departments, since power in them is so diffuse. The top Man's autocratic decision was hardly the way to introduce a participative approach, and the meeting raised expectations above the delivery point. There was great excitement about the new management style ; everyone thought things would change completely and immediately. However over the next few months, budgets were done the old way, and some key decisions were imposed autocratically. A program that might have been a success if introduced slowly obtained a bad name in its opening months because of the raised expectations.

The best way to avoid this error is, from the start, to think and talk in terms of three to four years. Beckhard (1969) refers to "short-time framework " (p. 94), as a condition for failure. Another way to avoid the error is to describe every OD intervention as an " experiment " but I have never done this because it can lower the responsibility of everyone involved and can also allow failure to be explained away too easily—"we agreed it was just an experiment".

Inappropriate Attachment

Many change agents would share the view that the nature of the consultant's attachment to the client is a key element in the success or failure of the intervention.

The chairman of a 10,000-employee subsidiary of a giant British industry invited me to dine with his board members at their country house training centre. It was an epic meal, and the vintage port flowed. The conversation was witty, and I had to lean on my limited classical education to keep up with the literary allusions. In preparation for an MBO conference, I had, in fact recently re-read Thucydides' History of the Peloponnesian War, and this gave me some good lines. My first error was to accept that invitation and my next was to visit again in similar circumstances. It was a superb, if unconscious, seduction of me by the client. My relationship to this client became that of an intellectual, witty companion. My attempts to change roles were met with incredulity.

Other versions of this error are failing to obtain multiple entry ; attaching oneself at too low a point in the organization ; interfacing with an individual rather than with a group ; allowing slavish dependency ("We really need you ") or counterdependency ("You have served your purpose ") by the client. At times I have been "attached " as servant, master, captive behavioural scientist, visiting professor, tame seal, and resident magician. Sometimes I have had to remind clients that I have not walked on water recently. Sometimes I have had to remind myself.

Obtaining the appropriate attachment can be one of the most difficult things to accomplish. It can be facilitated by having a few ground rules for the client to accept at the start. These might range from not eating with the client—a rule Tavistock once used—to never talking to any one individual along. The attachment issue is particularly difficult for the internal changed agent ; the ideal structural device is a three-year guaranteed terminal assignment with all remuneration issues settled in advance. Beckhard (1969) refers to "overdependence on outside help " (p. 94) as a condition for OD failure. This is one face of the multifaceted problem of attachment.

Becoming Trapped in one Part

One element of good change strategy is multiple entry ; but it is all too easy to become trapped in, or by, one part of the organization.

A brewery used my services to improve its marketing orientation. The change program was highly successful, and in the three-year period, the profits went from $500,000 to $1,000,000. Meanwhile the sole competitor's profit fell from $ 500,000 to $ 70,000. During this same period, the position at the top of the marketing team increased greatly in power, changing, in essence, from public relations officer to sales manager and then to vice president for marketing. All this was very well, but it was not viewed that way by the production department, which had seen its considerable power and prestige erode. At this point (or earlier), the OD emphasis should have shifted to such interfaces within the firm, and I made several unsuccessful attempts to achieve this. In the minds of the production people, I was the wicked consultant who had hurt them. In the minds of the marketing team, I was their man to use in the fight against production. All this might not sound too bad, but twelve years later, very low trust still exists between the two sub-systems to the degree that I, even now, discuss with the marketing vice president whether he ought to move on.

The possible solution to this problem is to obtain and maintain multiple entry to anticipate the consequences that might arise from current change efforts. One can often identify where one might be needed by identifying who the client talks about most disparagingly.

Changing only a Sub-system

Changing only a sub-system was a common error of mine, especially when I worked with large systems.

In the early sixties, a one-thousand-employee division of a three-thousand-employee power commission engaged in a successful attempt to increase employee initiative. Indications of this were that line-crew foremen, not head office engineers, selected line tools, and that meter readers wrote their own rule books and established their own work norms. A major conflict developed between this division and other divisions and the central systems unit. Fundamental disagreement arose over how many signatures should be on expense accounts, what was an appropriate discretionary amount for truck drivers to spend on repairs on the road, and, in the biggest fight, where computerized individual performance data should be fed—to the individual, to his superior, or to a staff unit ? The conflict is unresolved today, and in this tightly integrated technology, two quite different climates exist where, presumably, any one type of climate would be better.

While the previous example refers to sub-systems aligned vertically, the error applies equally well to systems aligned horizontally. The error then involves treatment of one level but not another. It could be bottom-up change, exclusion of top people, or having only supervisors sent to MBO or OD seminars. Beckhard (1969) states a particular case of this general error as " a large gap between the change efforts at the top of the organization and efforts, at the middle of the organization " (p. 95).

As every system is partial to every other system, and since the one predictable thing about OD is its unpredictable consequences, this error is likely to be made continuously. The best way to avoid it is to establish specific, measurable objectives at the start and to obtain agreement to them not only from the system assumed to be directly involved but also from adjacent systems. This is at least one way to make the changes without impairing other relationships.

Inappropriate use of Behavioural versus Structural Interventions

The bread and butter of the psychologist is the random error of the sociologist. Those of us concerned with change in behaviour in organizations can be easily biased too strongly. Is a personality clash a function of poor role clarity or of low human skills ? Either of these may, at times, explain most of the variance, but one may easily choose the wrong explanation in a particular case.

I was once asked to plan a change programme for a Montreal production subsidiary of a U.S. firm. Four of the subsidiary's general managers had been fired in six years for failure to show a profit. The trust level was low, and most managers had moved to a very low level of risk-taking. After I had started to unfreeze, team build, develop candor, etc., an independent study by the parent company uncovered major errors in the transfer-price system within the subsidiary and from the subsidiary to the parent company. When changes in these prices where introduced, profits started to appear, and the current general manager stayed with the company for eight years. The company had really needed a cost account rather than a change agent.

A similar error was narrowly avoided when the president of a fish-packing firm turned down my idea to start team-building sessions with his trawler-fleet captains. The problem was that the members of the competing Russian fleet co-operated with each other while his own trawler-fleet captains did not, thus showing lower productivity. He pointed out to me that under Canadian Maritime Law, the trawler-fleet captains and crew were not employees but merchant co-adventurers.

Each was an independent businessman. Not only the legal system but the existing community structure and a long local history supported this view. He said that it would be farcical to imagine that much could be done by a seminar demonstrating that co-operation optimizes the system but does not necessarily optimize each individual in it.It should be rather like rearranging deck chairs on the Titanic. The clincher was the president's report of the first, and last, Christmas Eve party that the executive committee had arranged with the captains. It had to be on Christmas Eve, because that was the single day of the year when all trawlers were in port. The trawler captains used the occasion to announce their first strike. Their spokesman apologized for the timing but explained that it was the first time the captains had all been together.

Beckhard (1969) refers to precisely this error as " no connection between behavioural science-oriented change efforts and management services/operations research-oriented change efforts " (p. 94). To avoid this error, one must either develop a wider range of conceptual tools or somehow bring such tools to bear. Psychologically oriented change agents would do well to read more of the literature on systems theory, sociology, and even Management By Objectives.

Losing Professional Detachment

A surgeon once told me that during operations, it was not uncommon for him to tell dirty jokes to the nurses. He explained that such behaviour served to maintain a psychological detachment from the patient, since psychological involvement might have affected the surgery.

After working with one U.S. client intensively for two years, it became apparent to me that the client was talking about change and had built a staff to implement it, but that no change was taking place. For various reasons I was emotionally involved with this client and wanted the program to be a success. My style became abrupt and argumentative. Instead of trying to analyze the resistance with the client, I was berating him for not changing it. At that time, I ascribed my change is style as my innate style flexibility ;after fall, very few of us remain who are equally adept at Theory X and Theory Y (Mc Gregor, 1960). Now I see my actions simply as emotional involvement leading to a lowering of effectiveness.

As a boy of seventeen, I was roaming Eastern Canada in the winter looking for work, which was hard to find. I heard of a free two-day residential course conducted by the St. John Ambulance Brigade, with meals provided. I decided that if was my public duty to learn first-aid. I will never forget one instructor's comment : " Suppose you are the first on the scene of a two-car collision. People and their legs are lying about and there is a lot of screaming and blood. If you want to be helpful, first say to yourself, it is their problem, not mine". His intent was to shock us, and of course he did. He was saying, "Do not get too emotionally involved with the system you are trying to help ". The implications of this aspect of the role relationship are may and contentious. Does the client really have the right not to get well ? Is it a poor professional posture to hope the client really have the right not to get well ? Is it a poor professional posture to hope the client will get well ? Is joining the client the ultimate defeat ?

These days I pay more attention to my own feelings and watch for the danger signals. For me, at least, they include post-meetings depression, not understanding what is going on, making remarks that are a little too smooth or too crude, liking the client, wanting the client to like me, wanting an intervention to be a great success, attempting to impress the client, or obtaining much satisfaction from client praise.

Assuming a Change is needed

It is easy to assume that new is better than old or that a new label changes something. This, too, is an error.

After some preliminary discussion, I met with a project team of a power utility. The utility was located in a poor section of a very poor area. From looking at the boots that some of the team member wore to the meeting I was convinced that they were not likely to be acquainted with recent developments in behavioural science. I was sure that these people needed something; the question was " What ? " I suggested that we explore the concept of job enrichment and then heard explanations of what the four-man line crew does and what the sole operator of a remote generator does. I gave my famous talk on " let's burn the job descriptions " and was told that they had no real job descriptions. I discussed employee participation as the wave of the future and then was told of the annual two-day meeting with the general manager at which anyone can question any issue and at which reorganization decisions arise from floor discussions. I suggested implementing MBO. They showed me detailed ten-year plans for the company. In desperation I asked how they selected pole linemen. I was told " They must not be overweight, must not be afraid of heights, and must not drink on the job ". I left those people quietly, with as much grace as I could muster.

Sometimes we attempt change when the system clearly does not need it. Sometimes we do not know when to give up. I am reminded of two young Boy Scouts whose younger brother had fallen into a shallow pond. They rushed home with tears in their eyes to their mother. " We're trying to give him artificial respiration," one of them sobbed " but he keeps getting up and walking away ".

Failing to seek Help

The long-standing problem of those in the helping professions is that they do not seek help themselves. This paper is full of examples of such failures. The best way I know to avoid this error is first to admit one's failure to oneself and then to accept a fair share of the blame. It is wise for a consultant to identify other people in similar lines of work who also know the consultant as a person and to arrange for regular telephone talks about current clients. This is what I have done ; I have not found it useful to seek such assistance from my client's staff members, from external staff members that are also working with my client, or from those people who work closely with me. They are as emotionally involved as I am and are just as prone to distort the situation or issues, albeit in a different way. Another, more structured, device has been proposed by Bennis (1966) who commented on the Clinical Pathology Conference in which medical students and doctors find out for certain why a patient died. Bennis believes that this is a good teaching practice but says, " No equivalent teaching device exists in the behavioural sciences, unfortunately, mainly because we fare in a relatively early stage of developing a practice " (p 152). In a footnote, he continue: "There are other reasons as well, for example, the understandable desire for secrecy regarding failure or mixed success and the difficulty of ascertaining precise causes in these complex social-change ventures " (p. 152).

This article is clearly a highly personal account of errors. I am not at all tempted to develop a paradigm of errors that other change agents might make. I am sure, however, that embedded in the account of my errors are many assumptions about man, about the role of change agent, and about the change process that can be utilized by other practitioners.

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Sri Lanka Technical Agriculture and Social Organization*

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Country Description

The Island Republic of Sri Lanka is situated to the South-East of India in the Indian Ocean. It is located in the Bay of Bengal between the Eastern and Western half of the Indian Ocean with India as her immediate neighbour. The total area of the country is 25,332† square miles stretching 272 miles from North to South and 140 miles across from West to East. The total population is 13 million growing at a rate of 1.8% annually‡. 73% of the population is below the age of 35 years. Over 60% of the population is below 25 years and employment for the youth is a major National problem.

Per Capita Income and House-hold Size

The average per capita income is approximately Rs. 1,122 (1973) i. e. $ 140. According to a recent Socio-Economic Survey over half of all individual income receivers reported money incomes of less than Rs. 100 a month and about 4/5 reported a money income less than Rs. 200 per month. Since the numbers reporting money incomes of less than Rs. 100 per month was only 30% in the urban sector it would be seen that the larger percentage of lower income groups are in the rural sector The over-all average of house-hold income is Rs. 441 for the urban sector, Rs. 198 for the Estate and Rs. 264 for the rural sector.

The average size of a house-hold in Sri Lanka is 5.8. For the urban sector (non-farm family) it is 6.3 and for the rural sector (farm family) it is 5.8. The non-farm house-hold size therefore is larger than the farm house-hold size.

Agro-Climatic Environment

Being close to the Equator Sri Lanka has a Tropical Climate and since it is within the Monsoon wind belt there are two main periods of heavy rainfall—the North-East Monsoon from November to January which is the major agricultural season (Maha) and from May to September South-West Monsoon (Yala). There are specific characteristics of the Agro-Climatic Environment which determine the growth trends in Agriculture. Firstly one observes the division into two large Zones one called the Wet Zone containing 30% of the land area and receiving an average rain fall of 113 inches and the other the so called Dry Zone comprising 70% of the land area and receiving an average rain fall of 64 inches. The Wet Zone has a duality of a highly developed plantation economy of Tea, Rubber and Coconut which are the primary export crops on which depend 90% of Foreign Exchange earnings and the relatively un-developed domestic agricultural sector consisting of small holdings. The Dry Zone comprises largely of peasant small-holdings irrigated by a Net Work of major and minor tanks while the Wet Zone small holdings are mainly rainfed supplemented by small scale anicut-cum-channel irrigation schemes. Due to the lack of a major irrigation infrastructure domestic agriculture, mainly rice production, is subject to serious fluctuations and crop failure due to recurrent drought and flood conditions.

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* Adapted from a Country Report presented at the Expert Group Meeting on Curricular Planning for a Short-term course on "Technical Agriculture and Social Organization" organized by the Southeast Asian Regional Centre for Graduate Study and Research on Agriculture at Los Banos, Philippines.

† Statistical Abstract of Sri Lanka—1973.

‡ Central Bank of Ceylon—Annual Report—1975.

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Secondly, besides the two large Zones of the Wet Zone and the Dry Zone Sri Lanka has wide variations in soils, climate and water supply conditions. The land and water use Division of the Department of Agriculture has identified 24 Agro-Ecological Regions 10 in the Wet Zone, 9 in the Intermediate Zone and 5 in the Dry Zone each with the potential for the production of different combinations of crops requiring different cropping patterns and management systems. Latosols occur on 4/5 of the land area. Other soils include ground water bearing laterite soil, regosols and a small area of alluvial soils in the flood basins of the river catchments. A major factor influencing agricultural productivity is that the latosols are marked by laterite layers, known as Cabook which interfere with the penetration of roots and water, heavily weathered and low in plant nutrients, yielding poor harvests and, more significantly, resulting in precipitation exceeding infiltration into soils in most rain storms. In practical terms this means, since the land formation is basically of the ridge and valley type, the severe run-off causes soil erosion and major damage to the fertile top-soils. Proper management of land and water and effective soil conservation is central to the problem of management and neglect can lead to serious trouble in the future.

Agricultural Productivity

At constant prices the GNP for 1974 is valued at Rs. 10,730.5* million. The contribution from Agriculture, Forestry, Hunting & Fishing is Rs. 3,558.3* millions or 33% of the G. N. P. is from this Source.

When assessing the contribution of agriculture to the National Economy we have to divide it into two distinct areas of Productivity, namely Domestic Agriculture and Export Agriculture. In Domestic agriculture, there has been a significant increase of paddy production, in recent years. Output increased by 22% rising from 62.9 m. bushels in 1973 to 76.8 million bushels in 1974. A very large increase in the extent under cultivation, about 20% contributed to increased output.

As against the satisfactory performance of domestic agriculture, the productivity of the plantation sector was disappointing. There has been a marked decline in production of Tea, Rubber and Coconut.

Production of Tea declined from 503 million lbs. in 1965 to 450* million lbs. in 1974. Although rupee export earnings have increased from Rs. 1,210 million in 1965 to Rs. 1,360 million in 1974, the equivalent foreign exchange earnings in SDR have shown a marked fall from SDR 203 million in 1965 to SDR 168 in 1974.

Rubber Production reached a peak in 1970 with 351 m. lbs. and thereafter declined. In 1974, it stood at 301 m. lbs. Coconut production in 1974 was, 2,031 million nuts which represents a marginal increase over 1973, but still below the record product of 2,963 million nuts in 1972. Recurrent drought conditions in the past few years is an important contributory factor for the drop in production.

*Central Bank of Ceylon—Annual Report—1975.

Employment

The Agricultural labour force in Sri Lanka has for almost twenty years been about 55% of the total work-force.

(1) Tea—597,000* Acres at 1.25 per acre ...	...	746,250
(2) Coconut 1.1m. Acres at 0.1 per acre ..	..	110,000
(3) Rubber 562,000* Acres at 0.35 per acre ..	..	196,700
(4) Rice 1.7m. Acres* at 0.25 per acre ..	..	425,000
Work Force	..	1,477,950
Subsidiary Crops	..	180,000
Total	..	1,657,950

Other crops, animal husbandry, forestry and fisheries could make up a total of 1.7 million.

Foreign Exchange

Sri Lanka's foreign exchange situation is to a large extent determined by the value of and the volume sold of the three major export commodities, Tea, Rubber and Coconut. More than 90% of the total value of exports has been accounted for by these in recent years—US $ 302 Million of a total Foreign Exchange earnings of US $ 335 Million (1972 figures) and fluctuations in International Markets largely explains variations in the value of these 3 exports. The most important export crop is Tea which contributes approximately 60% of the total export earnings and next in importance is Rubber, 15-20% and Coconut 10-16%.

Land Area and Land Holding Size

The total land area in Sri Lanka is 16 million acres of which about 10 million acres are cultivable. The total extent cultivated at present is around 5 million acres of which 600,000 acres are under Tea, 562,000 acres under Rubber and 1.1 million acres under Coconuts making a total of 2.26 million acres under Plantation Crops. Rice production occupies about 1.2 million acres of which nearly 75% is under Irrigation.

An important feature of the domestic sector of Agriculture in Sri Lanka, which is mainly rice production in the low-lands and other food crops in the up-lands is that the production units consist mainly of small-holdings. Of the total land area in cultivation of nearly 5 million acres, 3.90 million acres are in small-holdings made up of 1.62 million acres with an average holding size of 2.36 acres. Evidence reveals that the size of holdings has dropped during the 10 years between 1962 and 1973 and over 85% of small-holdings are now under two acres in extent.

The basic problems which arise are—

(1) How could highly productive systems of Agriculture be developed in the context of large multitudes of small individual holdings ?

(2) How is the domestic food production sector consisting of subsistence level small farmers to be integrated with a modern plantation sector and a National system of agriculture created ?

* Central Bank of Ceylon—Annual Report—1976.

Crop Statistics

	Area (1,00 *acres*)	Output (*Rs. million*)	Yield (*Per Acre*)
Tea	597* ..	844 ..	814 (lbs)
Rubber	562* ..	345 ..	608 (lbs)
Coconut	1,100* ..	478 ..	2,290 (nuts)
Other tree crops	187 ..	70 ..	—
Rice	1,700* ..	1,029 ..	44.41 (Bushels)
Other field crops	503 ..	608 ..	—
Total ..	4,649*	3,374	

Although Tea and Rubber are mostly grown on a Plantation scale in large Estates and unlike small-holder peasant rice production there are heavy investments in fertilizers and agro-chemicals as well as systematic management of soils, there is much scope for increasing yields. For instance, the average yield of an acre of Tea is 814 lbs. while the better Estates yield over 2,000 lbs. per acre. Similarly in coconuts it is about 2,290 nuts per acre, when the better Estates yield more than double this amount with increased use of fertilizers and other improved production practices. By re-planting old Tea, Rubber and Coconut Plantations with newer, high yielding clones there should be annually at least a 20 to 30% increase in yields. The rate of re-planting Tea and Rubber is about 7,500 acres per year. This has to be doubled during the next Plan period (the present Plan period is from 1970/76 and is due to end) so as to have a substantial impact.

It would therefore be seen that modernization of peasant agriculture as well as intensification of production in the estate sector have to go hand in hand if agricultural productivity is to be enhanced. A very significant event which occured in 1972 was the nationalization of private lands over 50 acres in extent as a Land Reform measure. Together with this all Sterling Company foreign owned Estates were taken over by the State as a further measure of Land Reform. Nearly 1 million acres of land have since come into the ownership of the State. It is now possible for an integrated programme of modernization of Agriculture to be launched in these two sectors. Already a good part of the marginal lands as well as estates close to village centres have been alienated to peasants under schemes of village expansion. Concurrently a good part of the balance lands have been handed over to State Corporations specialising in plantation crops. Further extents have been handed over to Co-operative Farms, Collective Farms, Youth Settlement Schemes, etc., since social ownership of lands also implies the setting up of new and innovative social organizations to handle their management.

High priority is being given to livestock development in the current Five-Year Plan. The out-put targets and the proposed investments (set out below) aim at achieving self-sufficiency in all animal products. Although the targets seem modest (in view of the heavy investments involved) it is assumed that per capita consumption would remain constant while expansion of population and import substitution would account for the limited expansion.

* Central Bank of Ceylon—Annual Report, 1976.

Present and Projected Livestock Demand 1970-76*

	1970	1976	Average Annual Increase %
Milk (million pints)	457.0	517.0	2.1
Beef (million lbs.)	62.3	71.0	2.2
Mutton (million lbs.)	14.7	16.2	1.6
Pork (million lbs.)	7.3	17.0	15.1
Poultry meat (million lbs.)	8.8	14.8	9.0
Eggs (million)	278	342	3.5

It is important to note livestock production has received a tremendous impetus with the setting up this year of a Livestock Development Board which has been vested with 8,483 acres of land taken over by the State in the Cocount Belt of the Western and the North-Western Regions of Sri Lanka. It is now possible for the State to invest on imported foundation stock, cattle breeding and the necessary ancillary services as well as integrating Livestock with Crop Farming.

Planning Process

The Planning Process in Sri Lanka takes the form of 5-year medium term Plans and Annual Implementation Programmes. National Targets are set out taking into account the potential productivity of land including existing crops, projected demand and market situations. It also takes into account present per capita consumption in respect on food crops, Livestock, etc., and the forecasted increases in population. There has been a great deal of planning for the domestic agricultural sector for over a decade. The Ministry of Agriculture, in consultation with the Ministry of Planning works out the basic targets over the Five-Year Plan period which is further broken down into Annual Targets. The latter is assigned to the districts in which the Government Agents as Chairmen of the District Agricultural Committees set up an Inter-Disciplinary Team of officials to develop detailed Annual Implementation Programmes mainly for the rice production and subsidiary food crops. Targets in respect of fertilizer, foundation seeds, Agro-Chemicals, Irrigation, Tractors and equipment, etc., are worked out for each district in term of acreage to be cultivated each year. The figures for the 22 districts are aggregated as National targets and an all Island National Implementation Programme is printed annually by the Ministry of Agriculture and Lands. The release of Foreign Exchange for the import of fertilizer, Agro-Chemicals, Farm Machinerry and ancillery equipment are all based on the annual Implementation Programme Targets.

A noteworthy feature of the Planning Process for domestic Agriculture is the vigorous participation of farmers through Agricultural Productivity Committees, Cultivation Committees, Multi-Purpose Co-operative Societies and special co-operatives in planning activity. Each district plan is broken down into targets for each Assistant Government Agent's Division. These are further broken down to cultivable extents at the village level and field Project Officers meet with the village leaders of Institutions at this level and jointly prepare the Annual Implementation Targets. A further step in the planning process is the investing of wide powers to Agricultural Productivity Committees which, in each D.R.O's Division, is now the regional authority for planning agricultural productivity in respect of all land, whereas Cultivation Committees set up under the Paddy Lands Act of 1958 were only limited to assisting in planning for rice production. The Agricultural Productivity Laws now enable Agricultural Productivity Committees to set down and enforce proper Management standards and cropping patterns for each region and initiate as well as co-ordinate the execution

* "Medium-Term plan, Framework of Plan Targets, Agriculture", Ministry of Planning & Employment, 1971.

of the Regional Agricultural Productivity Plans. A significant change from the past is the fact that whereas the field staff were hithereto invested with this responsibility, under the new policy, the social organizations are given the powers and the responsibility and the field officers have hereafter to co-ordinate their work under the leadership of village Institutional Heads. Five hundred Agricultural Productivity Committees with an equal number of Agricultural Service Centres have been set up to service the new Agricultural Programme. Under the roof of the Agricultural Service Centres the farmer can now obtain all his requirements including agricultural credit and crop insurance. The Chairmen of the A. P. C. C. have also their offices in each Centre so that these are, in effect, the nodal points for agricultural actvity in the rural areas.

The problems which have surfaced in Agricultural Planning during the past few years need to be analysed and the present trends in agricultural planning require attention. Up to about 1972 Agricultural Planning/Implementation was carried out in the background of rice and other staple food being imported with a total ban on the import of food items other than rice, flour, and a limited amount of sugar the stage has been set for large scale commercial production of food crops since relatively high price supports are now available in the domestic market. The result has been an urgent need for transformation of the organizational infrastructure and basic changes in Policy which are currently underway.

The lack of accurate Agricultural Statistics is a major constraint to realistic planning. The training of field level staff and the officials of Agricultural Productivity Committees and the vesting of the responsibility for providing accurate data of the Chairmen of the A.P.C.C. and their staff who are responsible to the people as against the earlier system of placing the onus on the field staff is expected to bring about a change towards the development of more reliable field information systems.

A fundamental structural problem in Agricultural Planning which is common to the Asian Region and is a part of the Colonial heritage has been the organization of Government activity through Ministries and Departments with vertical Agencies extending to the Regions from the Centre. Departmental Services are organised narrowly on functional lines and no proper co-ordinative apparatus exists for linking technical services in Agriculture with other Government Agencies and Social Organizations dealing with Agricultural Production. A major effort is needed to ensure the necessary organizational changes are initiated to develop integrated approaches to Rural Development particularly in respect of agricultural production.

Agricultural Research and Extension

Major Institutes

In the field of domestic agriculture the Central Agricultural Research Institute at Peradeniya co-ordinates the major extension work carried out in the different crops at Regional Centres. The Research Station at Maha-Illuppallama is mainly responsible for research in Dry-Zone crops with 4 other Research Stations specialising in rice research and 9 others in a variety of other crops.

Current Programmes

While the Rice Research Stations are mainly involved in developing new hybrid varieties of paddy of the short-aged dwarf varieties which are resistant to plant diseases and pests, the other institutions are engaged in research relating to specific crops for developing new high-yielding varieties which are disease and pest resistant. They are also involved in specific research relating to varietal

trials, Soils Analysis, Agronomy, Water Management, Pathology and Entomology. The C.A.R.I. also carries out specialised research in such areas as Cereal Chemistry, Food Technology, Domestic Botany, Plant Introduction, etc.

Man Power

The attached schedule gives a total picture of the existing Man Power and the additional Man Power requirements during the Plan period. The staff indicated in the schedule are distributed as follows.

Research

The Research Staff are distributed according to the type of research done at each Research Station. 54 Research Officers, 33 Experimental Officers and 33 Agricultural Instructors are presenlty distributed according to the functional areas of :—

(1) Field Crops ;
(2) Horticulture ;
(3) Other perennial crops ;
(4) Pastures.

In the Regional Research Stations specializing in each area of research, 8 Research Officers, 3 Experimental Officers and 22 Agricultural Instructors, are located at the C.A.R.I. mainly responsible for the specialized areas of research indicated earlier.

Equipment Facilities

The C.A.R.I. has a fully developed infrastructure of lecture rooms, dormitories and well laid out demonstration plots for field work, besides, training aids such as films, over-head projectors, slides, graphics which are used in facilitating communication. The Publicity Division of the Department distributes extensive literature including leaflets explaning briefly the new extension methods and booklets giving full details of how to grow and look after different crops. Research Laboratories exist to undertake chemical analyses of soils, plant mutations, etc., and these cater to the needs of various subject specialists. The Dry Zone Research Station at Maha-Illuppallama has developed facilities to carry out any type of research on soils and crop in the region.

Agricultural Training on Technical Agriculture and Social Organisation

Major Institutes

The major Institutes invloved in T.A.S.O. are :—

(1) The Agricultural Research and Training Institute ;
(2) The Academy of Administrative Studies ;
(3) The Co-operative Management Services Centre ;
(4) The In-Service Training Institute of the Department of Agriculture at Peradeniya ;
(5) The Rural Development Training Institute.

Training Programmes

(1) *The Agricultural Research and Training Institute*

This Institute runs a broad range of courses mostly of short duration for field officers of Departments, Government Agencies and Social Organizations, in the field of Agricultural Development.

(2) *The Academy of Administrative Studies*

The Academy carries out In -Service Training in Development Administration and Management mainly for officers of the S.L.A.S. who handle Agricultural Development Programmes in Departments and Agencies, especially in the District Administration. For most of these courses Senior Officers of the Ministry of Agriculture and Lands and Departments and Divisions within it are brought in as resource persons both for lectures as well as for Panel Discussions. The Academy also provides a range of courses for other Departmental Officers and resource persons are similarly obtained for these courses form the Agricultural Sector.

(3) *The Co-operative Management Services Centre*

This Institution provides In-Service Training Programmes for Co-operative Inspectors and Officials of Co-operative Societies. A few of their programmes are also available for circulation.

(4) *The In-Service Training Institute of the Department of Agriculture at Peradeniya*

This Training Institute provides two week courses of training for new recruits to the department in the grades of Agricultural Instructor and Village Level Worker. It also provides a course of the same duration for A.II. and V.L.WW. with the emphasis on specific subjects and extension methods to be adopted in the different areas of the Island.

(5) *The Rural Development Training Institute*

This caters mainly to the Rural Development Officers who are the Divisional Officers in charge of the Rural Development Programmes of the Department of Rural Development. Government has set up nearly 6,000 voluntary Rural Development Societies which function on a self-help basis teaching farmers basic skills in Agriculture, agro-industry, processing of agricultural products and generally in Community Development. Each R. D. Society has to prepare a comprehensive Development Programme for each village with the emphasis on the agricultural sector. It organizes major voluntary self-help projects for improvement of community infrastructure. At the moment there is a programme for the renovation of 8,000 village tanks in the Dry Zone with food aid provided under the World Food Programme at a cost of US $ 12,166,400. It is expected to devote 11,200,000 man-days for this programme during a period of four years.

Man Power at Various Levels

The F.A.O. has recommended that for developing countries the number of farmers per extension worker should not exceed 500 under conditions of intensive farming, and not more than 1,000 under less intensive conditions. In Sri Lanka it has often been suggested that there should be one extension worker in respect of each cultivation committee area. This would amount to about 4,000 extension workers. Such a coverage would give the Agricultural Villages an extension worker roughly for about 750 acres. Since intensive coverage is usually given for " Special Projects " and in other areas where intensive development is needed the coverage in such areas can be increased. This would

appear to be a practicable number. However, the Department of Agriculture has only about 400 Agricultural Instructors who are the middle level extension workers with reasonably specialized skills and about 1,500 village level extension workers who are under the charge of 22 District Agricultural Extension Officers, one per Administrative District. The Government cannot afford to bear the entire cost of the balance of nearly 3,500 Extension Officers. The shortage can be met in two ways :—

(1) The major problem in Rural Development and specifically in Agricultural Development is the co-existence of a large number of departments and agencies with narrow functional areas of activity. Space does not permit details. However, at some stage, if integrated development is adopted as the approach, unification of cadres and training through foundational courses would have to provide the needed skills. Expert Group Meetings of this nature should be able to provide guidelines.

(2) Cultivation Committees which number 4,000 and Agricultural Productivity Committees which number 500 and the large number of Co-operative Farms, Youth Settlement Schemes, Electoral Farms, the State Plantation Corporation, the People's Agricultural Development Board, etc., could finance Agricultural Extension Workers who can be recruited from Farm Schools as well as from among progressive farmers. In most developed countries extension services are provided by large farms which have their own extension staff from whom the small farmers obtain technical advice and assistance. In developing countries Social Organizations which have been given the necessary powers and have extensive functions such as Agricultural Productivity Committees in Sri Lanka should fill the vacuum. It is imperative that T.A.S.O. Programmes should be devised to provide training at all levels on the basis of continuous and intensive in-service training programmes mainly of short duration to serve the training needs of such persons.

Facilities, Equipment and Instructional Material

The T.A.S.O. Institutes which have been referred to elsewhere in this report have well developed facilities to cater to their participants. The Agricultural Research and Training Institute, The Rural Development Training Institute, The Academy of Administrative Studies and the Co-operative Management Services Centre have spacious lecture and seminar rooms and access to a wide range of equipment and training aids. These include such Audio Visual Aids as Video Tape Television, Over-head Projectors, Film Projectors, Slides and Sound Equipment. Assistance has been available from U. N. Agencies, private foundations and Government to Government Aid Programmes for development of communication and information systems. However, there is a great deal of room for improvement especially since there is a dearth of facilities and equipment at District Level Training Centres and almost none for conducting village level T.A.S.O. Training Programmes in which the largest number of persons require to be trained.

Future Plans

Departments and Agencies in the field of Agricultural Training for Technical Agriculture are moving closer together to operate common programmes. On the one hand while the field of Technical Agriculture being somewhat narrow requires the services of subject specialists in such matters as plant breeding, agronomy, soils, fertilizer, water management, control of plant pests and weed control,

who could assist in training Government Staff at village level, on the other hand, the current trend in developing countries is to involve the people's particpation in Agricultural Development through Social Organizations both statutory as well as non-statutory. This necessarily means that Training Programmes have to be widened in scope to enable extension workers to acquire skills in managing people, developing leadership both among themselves and among farmers, mobilizing people through their institutions towards mutual co-operation in common programmes and developing inter-disciplinary team approaches which cut across sectoral and departmental boundaries. These T.A.S.O. Training Programmes have to be in the nature of integrated Rural Development Projects.

Problems and Needs

The following problems are clearly seen in surveying the training field :—

(1) The number and variety of Training Programmes run by different Departments and Agencies in the Agricultural Sector. There is a great deal of duplication and resources are not utilized fully due to lack of co-ordinated programmes.

(2) As most Departments have narrow functional objectives T.A.S.O. Training Programmes show a lack of relatedness and compartmentalisation which run counter to the impelling need for integrated approaches between related sectors.

A basic structural overhaul of the Governmental Organizations for T.A.S.O. Development has become a crucial need. To put it briefly, the Department of Agriculture now organizes research specifically in relation to individual crops and disciplines. But agricultural development is now moving outward in favour of developing viable and profitable farming systems.

(3) Three basic changes are involved—

(*a*) Research must move out of the isolated involvement with individual crops/ livestock and develop an inter-disciplinary, problem solving approach.

(*b*) Agricultural Development hereafter would have to be on the basis of regional specialization based on plans of Regional Development.

(*c*) Research must be action-oriented leading to short-term results applicable in the field.

(4) Training, Research and Extension are necessarliy an integral package. Field Organizations and Structures have to be altered basically to provide for such integration.

Recommendations

As already indicated above organizational changes are imperative in the current situation. To begin with, Training, Research and Extension Services presently are single crop and discipline oriented. The future course of Agricultural Development is inexorably moving towards regional specialization.

Under Agro-Climatic Environment it has been pointed out that Sri Lanka has 24 Agro-Ecological Zones. Nine of the ten known soil types are found within the Island. Besides the two main divisions of the Wet Zone/Dry Zone each of the river basins has its own soils, topography and forms of vegetation. Each catchment is capable of developing a wide range of crops and cropping systems.

Regional specialization involves the setting up of composite Research Stations which are linked to Extension Centres by subject Specialists who should approach research in an inter-disciplinary problem solving manner. This, in turn, should be directly linked through a Net Work of Regional Extension Centres to the farmers fields in which the Extension Staff and the Research Staff would confront specific problems with farmers and develop research methods to solve them and extension techniques to apply the results directly. Steps are now being taken to have a complete review of the T.A.S.O. Structures and changes are already underway. The existing Training and Extension centres are to be re-grouped rationally according to regional needs and the assignment of staff to them would be dependent on such regional needs. At the lowest level of staff viz., the village level extension worker (who number about 1,350) the skills and capability of the existing staff are not equal to the newly emerging tasks. It is proposed to gradually do away with this grade and expand the recruitment of Agricultural Instructors who follow an intensive two-year pre-service course leading to a Diploma, entry to which requires a combination of Science subjects relevant to Agriculture at the G.C.E. (O.L.) while the V.L.WW. require as qualifications, any combination of subjects at the G.C.E. (O.L.) and are given only 6 months training at practical Farm Schools. Despite continuous in-service training the latter lack the specialized knowledge and skills to work directly with the farmer, translating and transmitting research findings through extension to meet the needs of the newly developing farming systems.

Single crop specialization, in the future has to give way to diversification into multi-crops according to soil capability and climatic conditions. Farmers have to be educated to change their mono-crop economic systems to a diversified farming system in which crop rotation becomes the take-off point to modernization and enhancement of productivity. A major shift in T.A.S.O. Training Programmes is indicated towards developing inter-sectoral cross-disciplinary team approaches to development. The compartmentalization and narrowly functional training systems would have to be re-organized to provide for sectorally integrated training programmes which would include within its scope such subjects as training in leadership, institution building at the village level, Project Appraisal and Evaluation Techniques, Development of inter-sectoral planning skills and awareness of national goals and priorities in development. T.A.S.O. Training Programmes would have to be specifically "on-the-job" oriented with the development of training skills through the work environment in integrated area development projects.

A corollary to broadening the scope of T.A.S.O. Training Programmes is to bring within their ambit various levels of staff who have sectoral responsibilities in Rural Development. For instance, officers of the Sri Lanka Administrative Service, the Territorial Civil Engineering Organization, Agricultural Development Corporations, etc., are vitally involved in rural-based development activities. The T. A. S. O. Training Programmes should not only contribute to the specialized needs of each functional group but also design coures which cater to cross disciplinary and inter-sectoral needs. The increasing socialization of the means of production in Sri Lanka has the end-objective of increasing the people's participation in the development tasks and mobilization of their energies in the development process. Government Policy in setting up village-level institutions especially in the field of Agriculture has the aim of developing systems of self-management based on self-reliance among the people and the assimilation of the skills needed for this purpose.

T.A.S.O. Training Programmes have now reached a historically important point of time. The time has come for the large number of Government Officers at every level in the Administrative hierarchy to realize that Government's Policy Objective is a massive transference of skills from the bureaucracy to the people through their leaders in the social organizations. Two questions arise. Firstly, how could T.A.S.O. Training Programmes prepare these functionaries to a realization that the Socio-Political situation demands that they voluntarily participate in this process of skills transference? Secondly, the methodology of T.A.S.O. Training Programmes have to undergo a radical change in developing systems and methods by which such a massive transference of skills could be effected practicably without a dislocation of the development programmes. The success or failure of T.A.S.O. Training Programmes would depend upon the commitment of persons from the highest level downwards in accepting the challenge and the will to carry through such a transference.

ANNEXE

Anticipated Additional Technical Staff Required to Implement Proposals for Research, Extension and Education During the 5-year Plan Period 1970-1976

	Present Staff	*Additioal Staff required*
1. *Research*		
Research Officers	62	83
Experimental Officers	37	102
Laboratory Assistants	59	186
Librarians	1	2
Assistant Librarians	22	—
Technicians	—	3
Statistical Assistants	3	6
Research Station Superintendents	1	7
2. *Extension (including Mahaweli and Walawe Projects)*		
Agricultural Officer Grade :		
(i) District Agricultural Extension Officers	22	22
(ii) Subject matters Specialists	—	56
(iii) Extension Supervisors (Project Managers)	7	73
(iv) Crop Production and other specialised posts	8	54
Agricultural Instructors	319	500
Extension Workers (K. V. SS.)	1,493	*212
(* 1970/71 only for Mahaweli and other projects)		
3. *Education and Training*		
(*a*) In-service and Farmer Training Centres		
Agricultural Officers	1	29
Agricultural Instructors	5	23
(*b*) Education (Schools of Agriculture and Practical Farm Schools)		
Principals — (i) Graduates	1	5
(ii) Non-Graduates	4	—
Lecturers — (i) Graduates	17	42
(ii) Non-Graduates	17	—
Demonstrators	6	45
Laboratory Assistants	3	7
Physical Training Instructors	2	1
Librarian	—	1

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