SEMINAR
ON
IRRIGATION WATER MANAGEMENT
AND
AGRICULTURAL DEVELOPMENT
IN SRI LANKA

(20-21 February 1986)

ABSTRACTS OF THEME PAPERS

IMRIC Documentation Series No. 1 November 1986

AGRARIAN RESEARCH AND TRAINING INSTITUTE,
114, Wijerama Mawatha, Colombo7.

SRI LANKA

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ON
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ARTI

IMRIC

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IRRIGATION MANAGEMENT RESEARCH INFORMATION CENTRE
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114, Wijerama Mawatha
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SRI LANKA.

FOREWORD

The Irrigation Management Research Information Centre (IMRIC) set up at the Agrarian Research & Training Institute (ARTI) amongst its many tasks, has a mandate to organize seminars and workshops which will bring together researchers, policy makers and administrators to address issues of topical relevance and importance to irrigation water management.

As one of the first seminars organized by the IMRIC, the Seminar on Irrigation Management and Agricultural Development in Sri Lanka, we believe was useful and important for its discussion of key themes and issues in irrigation water management, especially as related to agricultural development concerns. This publication presents the abstracts of the papers read at the seminar, along with the addresses made by the Hon. Minister of Agricultural Development and Research and Minister of Food and Cooperatives, the Hon. Minister of Lands and Land Development and Mahaweli Development, the welcome address made by the Director, ARTI and the summary of the Panel Discussion that concluded the two-day seminar.

Mrs. Shyamala Abeyratne, Co-ordinated all aspects of the seminar. Mr. S.D. Karunaratne, Editor-cum-Documentalist (IMRIC) was responsible for bringing out the seminar proceedings in this form. I wish to extend my grateful thanks to them, as well as to paper writers, discussants and participants and others who made their contributions in various forms to make the seminar a success.

T.B. Subasinghe
Director/ARTI.

PART I

CONTENTS

I

WELCOME ADDRESS

BY

T.B.SUBASINGHE
DIRECTOR
(AGRARIAN RESEARCH AND TRAINING INSTITUTE)

Hon. Gamani Jayasuriya, Minister of Agricultural Development & Research andMinister of Food & Cooperatives, Hon. Gamini Dissanayake, Minister of Lands & Land Development and Minister of Mahaweli Development, Mr. Weragoda, Secretary, Ministry of Agricultural Development & Research and the Chairman of the Board of Governors of ARTI, Dr. Wickham, Director-General International Irrigation Management Institute, Mr. William Scheux, Acting Director, USAID, Secretaries, Additional Secretaries, seminar participants, distinguished invitees, Ladies & Gentlemen. It is my pleasure and privilege to welcome you on behalf of the Agrarian Research & Training Institute, to this Seminar on "Irrigation Water Management and Agricultural Development".

This seminar is organised mainly for two reasons. Firstly, it is to mark the establishment of an Irrigation Management Research Information Centre at the ARTI. A little while ago the two Hon. Ministers declared this Centre open. We hope that this Centre will function as a national centre for collection and dissemination of information on irrigation management research carried out not only in Sri Lanka but also in other countries. We also hope that it will initiate research and stimulate research to find answers to the problems in the field of irrigation water management. It is only then that its establishment will be justified.

Our interest in irrigation management started with our involvement in the Gal Oya Rehabilitation Project in late 1979. Under that project the ARTI

was commissioned by the Irrigation Department at the instance of the USAID which was the funding agency to do research and make recommendations regarding the institutional arrangements that should be made to solicit farmer participation in water management. This was the first major action research project handled by the ARTI. As such we did not have much experience either in action research or in irrigation water management. To our knowledge there were no institutions or individuals who had such experience and knowledge in the country, and therefore we sought the assistance of the Rural Development Committee of the Cornell University as consultant to the ARTI for this work. As we worked on the action research programme and established farmer associations at the field channel level with the help of a group of young men and women called Institutional Organizers we gained much experience and insight into the working of the irrigation system at Gal Oya. The most striking finding that we made as we entered the project area was the lack of communication and confidence between the officials and the farmers. Officers on the one hand felt that water management activities within irrigation schemes were the responsibility of technically trained personnel and there is nothing that farmers could do in this respect.

Farmers on the other hand felt that the officers did not appreciate nor did even attempt to understand the gravity of the problems faced by the farmers. They were of the opinion that officers did not do everything within their power to bring relief to the farmers.

However, we found that the farmers generally viewed the problems of the system fairly objectively. They not only spoke of the shortcomings of the officers but also identified their own weaknesses. Therefore, our first task was to find ways and means to establish communication between farmers and officers and to establish some confidence among one another. We selected the path of forming farmer associations at field channel level. Contacts were established between officers and these associations and their representatives. The success of this experiment is now well known for me to repeat here and the Ministry of Lands and Land Development has

already taken action to recruit Institutional Organizers to be posted to other irrigation schemes to introduce the concept of farmer participation in water management through farmer associations. When we disseminated the knowledge that we gained at Gal Oya and the success of the experiment from time to time through our publications, seminars and workshops the others interested in irrigation water management both in Sri Lanka as well as in other countries made demands on the ARTI for more information on the subject. In fact, Gal Oya became a common word in the forums conducted at international level to discuss problems of irrigation water management, and several of our officers were invited to present papers at those forums. Locally too, we conducted three seminars before this on this subject. The first was in 1980 on the theme "Mobilising Local Resources for Irrigation" the second was in 1982 on "Water Management in Sri Lanka" and the third was in 1984 on "Participatory Approach to Irrigation Management".

I recall that at the first seminar held in 1980 Hon. Gamini Dissanayake delivering the key note address appreciated the work done by the social scientists in the management of irrigation schemes and declared that he was deeply touched by the skilful manner in which their studies have surfaced and projected the human angle in the management approach. He said that irrigation management without farmer participation is like staging Hamlet without the Prince. As the ARTI was collecting data and gaining experiecne in the area of irrigation water management we thought of going a step further by deciding to establish an Irrigation Management Research Information Centre with the idea of collecting such information from all sources including other countries and making them available to irrigation administrators, policy makers, researchers, and others who are interested in the subject. This Centre will also undertake training of field personnel charged with organizing farmers for water management, but the most important responsibility of the Centre to begin with will be the dissemination of water management research results and other information on water management through its newsletter "DIYAWARA".

We established this Centre with the assistance of the USAID for which we are grateful to them. For this purpose they financed the extension of the building to house the Centre and provided the furniture equipment, and other items required for the Centre. They also provided facilities for the IMRIC co-ordinator to visit other countries in the region to make contacts with relevant authorities and see how similar work is being done in those countries.

The other reason why we thought of having this seminar on "Irrigation Water Management and Agricultural Development" at this time of the year is that the ARTI is completing 14 years of its existence on the 22nd of this month. It has been the practice of the ARTI to organize some activity to coincide with this date every year. It gives us an opportunity to review the work done so far and to reformulate the programme for the future. Everybody agrees that building up of this type of an institution takes time, and 14 years is a mere fraction of its probable life span. However, now we are in a position to say that the ARTI has a qualified cadre of officers belonging to a wide variety of disciplines in the social sciences who can undertake any type of research into the social, economic and institutional aspects of agriculture. With a deep sense of humility I must mention that the ARTI as an institution has gained recognition among institutions, universities, academics and researchers from all over the world and we are receiving requests often from them seeking affiliation with ARTI for joint research. Whenever possible we have agreed to such requests specially when the research area is something very relevant and timely for Sri Lanka and also when there is some provision for staff training. Perhaps, many of you may not be aware that the ARTI is unique in one sense as there are not very many countries in the world having separate institutions to look into the socio-economic aspects of agriculture. It is certainly heartening to note that the ARTI has become a much sought after institution among the world research community. But we are more happy when we come to know that farmers in this country are also aware of the ARTI as an institution which has been established by the

Government to help in the solution of their problems. We receive their fullest cooperation when we go to them for collection of data for our studies. There are also occasions when farmers write to us seeking our help and advice when they do not know where to go to get some problems solved. We have always responded to such requests. We are also happy to note that policy makers in Sri Lanka are paying attention to the results of our research by adopting our recommendations for policy purposes. The latest example is the small farmer association programme for agricultural development implemented by the Department of Agrarian Services. It is left for the evaluators of the ARTI research to see how much of the ARTI's work has influenced the agricultural policy of this country, the ultimate objective of which is to raise the standard of living of the Sri Lankan farmers to a respectable level.

In conclusion I would like to welcome you again for this seminar and we are thankful to you for accepting our invitation and for being present here today.

Thank you.

VI

INAUGURAL ADDRESS

BY

HON. GAMANI JAYASURIYA

MINISTER OF AGRICULTURAL DEVELOPMENT AND RESEARCH

AND

FOOD AND CO-OPERATIVES

Ladies and Gentlemen,

The twin events that mark this occasion are of great significance to agriculture. The inauguration of the Irrigation Management Research information Centre at the ARTI has been made possible due to the generous contribution the ARTI has received from the USAID and we are very grateful to the USAID for this support. I am confident that the newly established Centre (IMRIC) will serve a very useful purpose and open its doors to national as well as international scholars to make use of the facilities provided here. It will help our officers and farmers by providing them with up-to-date information to improve irrigation methods and thereby improve our agriculture. It will also provide information and organize workshops and seminars for that purpose.

I am specially glad that this Centre is organizing today its first Seminar on "Irrigation Management and Agricultural Development in Sri Lanka". I appreciate that speedy action and I hope the Centre will be most active and continue to be a source of inspiration and action in the years to come.

Those of us involved in irrigation today, can also draw inspiration from our own history. From very ancient times Sri Lankans have always given pride of place to irrigation, in their development strategies. The astonishing feats of hydro-engineering that turned the Island's dry zone into the proverbial "Granary of the East" is ample testimony to their endeavours. And today our Government has been able to take equally giant steps in that direction. To help the people to gain the fullest benefits

from them is the task before us, and I hope this Centre will contribute in a large measure towards that end.

While high productivity is associated with optimum and efficient use of land and water and a smooth flow of agricultural inputs, the most important factor particularly in irrigation scheme areas was the necessity to mobilise farmer participation in the systems management. It is now realised that in Sri Lanka, water even more so than land is becoming the limiting factor in agriculture. Hence farmer participation in water management is a pre-condition for increasing farm productivity.

As we all know, Sri Lanka is presently investing a large part of its resources in both large scale and village level irrigation projects with the aim of increasing food production, improving rural welfare and raising the socio-economic standards of the people. Physical construction, rehabilitation and maintenance of irrigation systems are important and therefore need careful planning and evaluation. At the same time good irrigation water management by both farmers and government agencies is also essential for the effective operation of these irrigation systems. Therefore with effective operation and management of irrigation water, I believe, it is possible to increase productivity and rates of return on investments in irrigation development.

I must say that this type of thinking is not new. Even in the 1960s such ideas were written in different plans and Mission Reports but nobody took them seriously for implementation. For example, Mission Report of FAO/IBRD Co-operative Programme which reviewed irrigation development programme in Sri Lanka suggested, among other things, that the irrigation rehabilitation rather than the expansion or the extension of irrigation works should be given priority. This report indicated the importance of effective management of irrigation water resources for scientific and intensive agricultural production specially in the dry zone where irrigation-based agriculture predominates.

This policy or rather the approach has had a great impact on several major irrigation projects since 1977. One can see a gradual shift of the focus of irrigation development from design and construction to a more humanistic managerial one in which agricultural development is emphasised through the beneficiaries' participation. Thus the relevance and importance of farmer organizations and their participation has come to occupy a distinct place in irrigation planning, operations and management.

We must remember that Irrigation Schemes have a life span and starts decaying after 20 or 30 years. They have therefore to be repaired, maintained and carefully looked after. Our efforts to increase the agricultural productivity and reach eventual self-sufficiency in food, will not be possible, unless and until we rehabilitate and maintain our major reservoirs and irrigation systems.

As you know the government has given high priority to the rehabilitation process. Already, several major irrigation systems in Anuradhapura and Vavuniya Districts in the heart of the Raja Rata dry zone have been so rehabilitated. More are to be taken up in the near future.

Another system that was taken up for rehabilitation in 1979 is the Gal Oya irrigation system - our first major irrigation system constructed immediately after Independence under the leadership of our first Prime Minister the Right Hon. D.S. Senanayake. Gal Oya Scheme has indeed blazed a new trail. It was due to his vision and leadership that this massive irrigation project was undertaken without any foreign aid. The "Senanayake Samudra" is today a monument to the memory of this great leader.

Gal Oya rehabilitation project is a land-mark in Sri Lanka's irrigation water management activities. Both the Irrigation Department and the ARTI have attempted at trying out the new approach by combining physical rehabilitation with farmer organizations in this project. This way, for the first time, all involved in the process namely the engineers, planners, contractors and the beneficiaries were brought together to

ensure effective physical rehabilitation of the irrigation works and water management.

This experimentation has introduced several methodologies, monitoring tools and evaluation concepts into the field of irrigation water management and long experiments have provided researchers, planners and policy makers with useful ideas on how to organize water management programmes in other projects.

"Learning through experience" was the guiding principle of the Gal Oya water management programme. Because of this programme we are in a much better position to understand irrigation water management as it applies to human welfare and agricultural development.

Now it is a very well established fact that Sri Lanka's agricultural development, depends mainly on efficient water management - this is demonstrable by taking Mahaweli, Lunugamvehera and Gal Oya irrigation-based agricultural settelemnts in the dry zone. In these places, water is the scare resource; not the land. Thus efficient water management has to play an important role in these projects.

This is the simple but very significant fact. And this idea is now being emphasised in many districts through District Agricultural Co-ordinating Meetings. Through these avenues, the government is trying to spread the idea, that the agricultural productivity levels are closely related to the amounts of water used in cultivation operations. This is especially important at present, as the irrigation management is becoming more complex, as a result of the introduction of crop diversification in irrigated lands.

On the other hand, management of irrigation water conventionally has been limited to large scale reservoir type of irrigation systems with large bureaucracies. But now, small village level irrigation systems - anicuts, small streams and tanks also pose complex problems of water management.

I am told that a recent ARTI research project has shown that social and physical environment of each system requires its own type of operational and management apparatus for irrigation management and agricultural operations. Thus a blanket recipe for all types will not bring expected results.

Although we have done a lot of research, training, institution-building and evaluations in the sphere of irrigation water management, there is much more to be done in order to understand the complexities and nature of irrigation systems in Sri Lanka.

In tackling this problem we have good reason to be happy, because at present there is a great deal of interest among government and private agencies in irrigation management issues. Because of the large number of persons and agencies involved, it has become difficult for policy makers, administrators and researchers to keep track of developments in this field. Lessons learned or experiences gained in different projects are not often easily available in a coherent form, so that, others can also use such experiences without repeating the same experiments.

In order to facilitate dialogue among researchers, policy makers and administrators and to provide all available information in a systematic manner, it is necessary to establish this national centre which will collect and disseminate information on irrigation water management.

The establishment of this new Centre at the ARTI, I am confident, will fulfil this need. This Centre (IMRIC) will also help the ARTI to serve the information needs of the Government on irrigation management.

Ladies and Gentlemen, I hope the work of the Centre will provide a valuable service to researchers and officers concerned with irrigation management at the ARTI, other government agencies and the International Irrigation Management Institute (IIMI).

I have no doubt that the Seminar that is to follow, will pave the way for the fulfilment of such objectives.

In that hope, I have great pleasure in inaugurating the Irrigation Management Research Information Centre and the Seminar on "Irrigation Management and Agricultural Development in Sri Lanka".

Thank you.

XII

KEYNOTE ADDRESS

BY

HON.GAMINI DISSANAYAKE
MINISTER OF LANDS AND LAND DEVELOPMENT
AND
MAHAWELI DEVELOPMENT

Honourable Minister, Secretaries of Ministries, Distinguished Ladies and Gentlemen,

"I am happy today to be given the opportunity of making the keynote address on "Irrigation Water Management and Agricultural Development in Sri Lanka" a topic that is appropriate and proper to be discussed on the occasion of the inauguration of the Irrigation Management Research Information Centre under the aegis of the Agrarian Research and Training Institute. It was in August 1980 in this very hall that I had the occasion and the privilege to make an address on "Irrigation Development and Research", wherein I said that while it is possible for the farmers to exist without officials, in that context it is not possible for officials such as you to exist without farmers. The whole exercise, in the context of a poor third world country such as Sri Lanka where approximately 80% of our people live on agriculture, directly or indirectly, is of such tremendous importance, that this discussion and the creation of IMRIC will undoubtedly be a signal mile post in the irrigation and agricultural history of our country.

All of you have heard the legend of King Dhatusena, who when pressed by his son, impatient as he was to succeed the old King, asked him for his legacy. He went to the bunds of the Kalawewa, waded into the reservoir, collected a handful of water and said "son this is my legacy to you". In this country which has an unbroken 2,000 year history of the hydraulics -

a hydraulic civilization about which the world has not found a parallel, I think water, land and its connections with man still indicate the key to our future. In any form of development it is necessary and fashionable today to look at the cost factor. Agriculture still is the only sector where a unit of employment can be created at approximately 1/4th or 1/5th of what it would cost a unit of employment in the industrial sector. So it is important for us to consider today where we are and where we should go. The genesis of the present programme started with the rehabilitation of the Gal Oya Irrigation Project. It was facilitated by direct assistance form the USAID. In the process of the rehabilitation of the Gal Oya Project which had fallen into disuse, which had all but lost its original thrust, it was decided to look at the whole process of irrigation in a different way. From the stand point of my Ministry, the Ministry of Lands and Land Development, the Gal Oya experiment, as we would call it, was so successful that we decided that it is time that we learn something from this experience and extended its benefits, its rationale and the knowledge of the officials and the experts and their cohesive behaviour and interaction with the farmers into other major irrigation schemes. What the interaction of farmer associations with the scientists and the engineers under the Gal Oya experiment showed was that the human factor is such an essential part of any successful effort being made to have a successful irrigation system. It was nearly 5 decades ago that the late Mr. D.S. Senanayake who was referred to by my Honourable colleague, decided through a vision that was rare for a third world leader, that it would be only if poorest of the poor in our country, was sustained into settled agricultural lives, that this country would have any chance of survival. Fifty years ago when he started the rehabilitation of those reservoirs and irrigation systems which had been neglected and which had fallen into disuse, he was almost called a heretic and a fool by the social elites of Colombo. It was said in an effort to persuade farmers not to go into these areas, that there were mosquitoes as big as crows. But his vision succeeded and it has been proved by history that his vision was entirely justified. If there is any factor which strengthens the democratic foundations of our society today, it is the emphasis, I might say the over emphasis which has been placed over the last 50 years on

stabilising the rural poor. Therefore the social input of giving irrigation facilities at state expense to the rural poor has been entirely justified. Looking back today, if we are to look at our perspectives as scientists and as managers and as officers, as permanent secretaries, what would be the way we look at our irrigation systems. Firstly it is the realization for many reasons that our farmers are unwilling to be subsistence farmers any more, that they look forward to a life of sufficiency if not of abundance. Secondly, it is a fact that the farmer is becoming increasingly market conscious, a consciousness which has come to stay largely because of the economic policies persued by this Government, the economic policies which we feel are relevant for a development process undertaken today. Thirdly that the farmer has to be stabilised not only by inculcating into him, good agricultural practices but also by the belief that the man who tills the land finally owns the land. I think these are factors which we should consider to be the lowest common denominators of any form of agricultural farmer development practised today. Thus, through the Gal Oya experience and through thought processes which have from time to time from all those involved in the planning and execution of agricultural programmes, it was felt that farmer participation was absolutely necessary. I do not think that there is anyone today who would demur from that thinking. It is accepted thinking today. Thus, when we get down to the task of looking at an irrigation system what do we do? Do we react to this situation from Colombo, from a research laboratory? Should we not look at it from the mud in the paddy field? Should we not look at it from the paddies? The different strains which are necessary for a successful agricultural system? We have to look at it from the family life of the farmer. We have to look at it from the ancient traditions to which he is an heir. We have to look at it from the prejudices that he has inherited and we have to look at it from a multiplicity of social factors, economic factors and political factors which go to make his daily life. Without that approach, any form of research, any form of thinking is artificial and remote. The complexity of these factors are such that one must learn not only to do research, but to understand the human factor, involved in all these processes. I will give you an example. Politics from a long time has been a very divisive

factor in Sri Lanka. Politics has brought into agricultural systems a lot of controversy. If you remember the 1970 election one of the key issues was the promise to negotiate with the World Bank. The abolition of the agreement with the World Bank on the water levy, which was concomitant part of the 29 million dollar loan to construct the barrage at Polgolla. That was one of the key issues in the 1970 election. Today one of the key issues is the operation and maintenance charge that is collected from the farmer. Though we have explained that this is not going to go to the treasury, that this will be kept at the district level, that it will be an input in the maintenance of the irrigation system, there is a leader of a political party who goes to court whenever a farmer is prosecuted, garlands the farmer when he comes out of court and organizes a procession through town, saying that the operation and maintenance charge should be removed. There had been many other factors which have been divisive in the appraoch to agriculture. I can tell you that in the Walawe Scheme, the only issue on which there was a lowest common denominator amongst the farmers was when the SLFP farmers, the UNP farmers, the LSSP farmers and the Communist farmers all got together and marched together to break the water gates in the irrigation systems. On that there was no issue. Because they found through a political process which was evolving, that on these matters there was common empathy. These are factors which we in public life have to deal with. These are factors which we got to put up with. These are factors in relation to which we have to find solutions. But I am happy to say that the efforts of the last 8 years have been entirely successful. For after all, we must synchronise our thinking into a very proud legacy that for over 50 years we have had free education in our country. One of the lessons which I learnt when I went to Gal Oya with my colleague, the Hon. Gamani Jayasuriya was the fact that we noticed that there was a fundamental difference in the way the older farmers were thinking and the way the younger farmers were thinking. The older farmers had been brought there. They felt they were brought there by force. They were given a 3-4 bed roomed house, they were given 5 acres of land for paddy cultivation. They were given 3 acres of land as highland. But when there was a tile broken in their house, they got used to the practice of going to the Government Agent and telling him "now replace that tile,

because the tile has broken". The young farmers of today do not get any of these. They do not get 5 acres of paddy land, they get 2 1/2 acres, they do not get 3 acres of highland, they get 1/2 acre, they do not get 3 roomed houses, they do not get a house at all. But still for every 250 vacancies of plots of land there are 5000 to 7000 applicants, whereas in 1940/1950 even in 1960 the applicants fell far short of the number of plots that were available. So it is time that we looked at farming in a scientific way. While I mentioned to you the political problems, I think this generation of farmers has come to understand, has come to realize the benefits of marrying scientific knowledge and farmer experience. It is something which we have come to accept as a political social and an economic reality today. The problem today is that in any form of irrigation development or agricultural development, there are a variety of foreign inputs. For example, though my colleague mentioned that we did Gal Oya entirely on our resources, 900 million in 1952/53, it is just not possible today, to undertake a project of that nature entirely on our resources. So the input of foreign expertise, foreign capital has come to be a concomitant of agricultural and irrigation development today. The other factor is the vast increase of our population. For example, in the hill country, which are such essential areas to serve as catchment areas for the major rivers of Sri Lanka, soil erosion and land slides are taking place, because the villagers are raiding into the jungle to cut trees for fuel wood. It has to be pointed out that 80% of the tobacco for the Tobacco Corporation or the Tobacco Company are from the hill country lands which form the catchment areas of the major rivers. These people who indulge in felling, Chena cultivation, and tobacco cultivation are not unaware of the fact that what they are doing is in the long run is damaging to the country, that it will lead to a situation where it will damage and destroy the agricultural and irrigation systems of the country. But it is also rational for them to think that they must make their own lives, lead a life which will give their sustenance day by day, before they can resort to conservation practices. Trans-Basin Development which was not possible before the invention of dynamite, has become a possibility today. Trans-Basin development is expensive and to carry water for miles and miles through tunnels is a new scientific discovery,

is new technology and we have to find methods by which such expenditure can be made economically viable. Therefore I think the creation of this Institute, this Centre is of fundamental importance to our planners and to our officials and our engineers. Because while we go about our day to day practices, subject to all the presures of a practising democracy we would like to have an objective view. We would like to have a synthesis of the different elements that go to make a balanced system, and your knowledge, your expertise and your experience will be a sustaining factor in the development of agricultural and irrigation systems in the years to come.

I am happy that the International Irrigation Management Institute is in Sri Lanka. I can, at this assembly, say how grateful we are to Dr. Wickham and to his group of scientists, firstly for choosing Sri Lanka as their centre. I wish to tell you that you made an entirely correct decision. As you said quite correctly that there is no place like Sri Lanka, where you could have had an institute of this nature. I hope you will interact with the relevant agencies in Sri Lanka and contribute as you no doubt will, to make your existence here meaningful not only for Sri Lanka but also for the whole region. You have our entire support and co-operation to make your institute a success. I am also happy that Dr. Panabokke has joined your institute, I know that his contrtibution will be rich and that he will play a very meaningful role in the evolution of your institution.

In the 1970s it was fashionable to speak of the Green Revolution. The Green Revolution which though debunked politically, due to political reasons was admitted as an essential reality by Dr. N.M. Perera in the Copenhagen Conference in 1970. The Green Revolution which was started then continues in Sri Lanka, today. We wish to maintain that momentum but in maintaining this great thrust in development, we do not want to make expensive mistakes, we do not wish to fall into pitfalls which we could avoid, if we have that element of guidance from the scientific community of this country. Therefore I do not wish to speak longer, both my colleague and myself are very happy to be here, we travel together, though

in two different Ministries. Our work is cohesive and complementary, I wish to appreciate on behalf of my Ministry the tremendous work that has been done by the Agrarian Research and Training Institute. I hope that the ARTI will continue to indulge in the research that they have marked out for themselves, and you can be rest assured that we will use your research and scientific knowledge and convert them into meaningful irrigation and agricultural practices.

Thank you.

PART II

ABSTRACTS OF

THEME PAPERS OF THE SEMINAR

ON

IRRIGATION WATER MANAGEMENT AND AGRICULTURAL DEVELOPMENT IN SRI LANKA

INTRODUCTION

by

Shyamala Abeyratne
Co-ordinator, IMRIC

The Irrigation Management Research Information Centre (IMRIC) at the Agrarian Research and Training Institute (ARTI) was ceremonially inaugurated in February 1986 and to mark the occasion, a seminar on the theme, "Irrigation Water Management and Agricultural Development in Sri Lanka", was held at the ARTI on February 20th and 21st, 1986.

The seminar brought together policy makers, researchers and others working in the twin fields of irrigation management and agriculture to discuss current themes and issues in irrigation water management as related to agricultural development, and to suggest an agenda for future research in this field.

The two-day seminar was grouped around 3 themes, namely, irrigation-initiated development in Sri Lanka, the role of irrigation in agricultural development,and the institutional aspects of irrigation water management. The fourth session was a panel discussion that surfaced some important policy and research concerns while synthesising the key issues that emerged from the other three sessions.

This publication attempts to bring on the proceedings of the seminar in the form of the abstracts of the papers presented, plus the main recommendations. The presentation adopted in this publication follows the sequence of the two-day seminar.

We believe that this publication will be a useful reference document to those working in the field of irrigation water management in Sri Lanka.

We take this opportunity to thank the authors who contributed the papers that are included in this document, and to all those who participated in the seminar to make it a success.

SESSION I - IRRIGATION-INITIATED DEVELOPMENT IN SRI LANKA

PAPER I

Irrigation Policies and Agricultural Development in Rural Sri Lanka: Pre-Independence Era, 1850 - 1950

Jayantha Perera

The most prominent feature of British rule during the period 1850 to 1950 is the sustained though not unbroken effort to develop dry zone agriculture through a revival of ancient irrigation systems both village and large scale irrigation.

In the restoration of village irrigation works the State utilized the services of "gamsabhawa" by reintroducing it under the Paddy Lands Irrigation Ordinance of 1856. The gamsabhawa provided the administrative machinery required for the purpose at the village level and the villagers were expected to provide labour to upkeep the irrigation works without payment from the State while the latter provided the sluice masonry and the technical know-how.

However in the 1930s the State shifted its focus to large scale irrigation in the dry zone. This change was an outcome of several factors such as the need for more food to feed the growing population and the estate labourers during the war times and also due to extension of universal franchise which necessitated re-orientation of State policy on social welfare.

Therefore it could be surmised that the British irrigation policy was experimental and area sepcific, with the result until 1940s hardly any advantage accrued to the wet zone consequent to the development of irrigation works. Hence it is difficult to gauge the impact of irrigation works on agricultural development during the period under review.

PAPER II

An Analysis of Trends and Perspective in Policies for Irrigation Development in Sri Lanka

J. Alwis

The policies that formed the basis of irrigation development programmes undertaken in Sri Lanka during the last five decades have shown a remarkable diversity in emphasis which still conform in a large measure to the pattern of development observed in many other countries in the region. The transition of design and construction stage to a maximisation of productivity has been made without much effort but its short-lived success pervaded through subsequent developments in the sector.

As demands on irrigation systems are ever increasing and their complexities are disproportionate to the knowledge and information available on them, a more concerted effort would be required to understand the behaviour of those systems. To understand their behaviour one has to stay with them with a hands on approach. Staying is even more important to farmers as they manipulate the system to suit their needs. The extent to which tolerance limits could be set for manipulation by officials and farmers depend largely upon a reconciliation of objective and an incorporation of each other's roles in an acceptable management framework.

PAPER III

Irrigation-Initiated Development in Sri Lanka with Special Reference to the Mahaweli Development Programme

D.J. Bandaragoda

Any further enhancement of the present status of irrigation-initiated development in Sri Lanka depends on the ability of the farmers to organize themselves into viable production oriented groups. Commodity organizations, producers' co-operatives, or perople's companies, or any other form of farmer organizations are suggested for the purpose of organized activity relating to marketing, pricing, inputs and the necessary linkages with other sectors.

Only when everyone stands to gain from participation and no one can gain more by not co-operating, can such organizations be successful.

Infrastructure development, and operation and maintenance should be on the basis of a continuing understanding of, and a commitment to, realistic cost-benefit analysis. Where the benefits are more or less fixed, or have rigid optimum levels, the strategy should be to reduce the cost of these operations to a minimum.

The total capital cost involved and the technologies used should be to an extent that can be socially and economically sustained. While very satisfactory results have been achieved in terms of construction achievements and settlement levels so far reached, greater responsibility to maintain these levels on a long-term basis is still ahead of us in the future. Urgent review and attention on the present status is essential in order to be prepared for this responsibility.

Irrigation-initiated development is a highly complex exercise which needs deep understanding on a broad range of issues. Undue urgency in analysis and implementation can sensitize us on a few important issues while anaesthetizing us to a number of other significant aspects. Evaluation studies on a continuing basis, and serious consideration of issues arising from them, are essential in realizing the desired goals of irrigation-initiated development work.

PAPER IV

Lessons from Gal Oya and Implications for ISM

Herbert G. Blank

Overall, the International Science and Technology Institute (ISTI) evaluation concluded that the Water Management Project was a successful project and specifically noted the contributions of the rehabilitation effort, the establishment of farmer organizations, and the increase in agricultural production, due in part to improved water management. The ISM Project will attempt to build on the strengths of the former project and avoid some of the weaknesses while introducing several new initiatives. The major areas which will be emphasized in the follow-on project are maintenance, the institutionalization of the farmer organization effort and increased participation of farmers in project activities, including physical and financial contributions to maintenance. On the operations side, the project should develop irrigation systems managed to respond to water demands of crops other than paddy. We would also like to see the agricultural support activities, such as seed productions, agricultural extension and marketing which can also respond to crop diversification. Finally the ISM Project includes research funds which will enable it some flexibility in order to react to research needs over the next six years.

SESSION 2

THE ROLE OF IRRIGATION IN AGRICULTURAL DEVELOPMENT

PAPER V

Irrigation Development in Sri Lanka
Implications on Land Use in the Dry Zone

W.A.T. Abeysekara

Sri Lanka's agricultural development plans have continued to emphasise a land expansionary policy throguh establishment of irrigation settlements in the Dry Zone. Within a span of 30 years, country has doubled its irrigated land area from about 0.96 million acres in 1950 to about 1.7 million acres in 1980. Despite the remarkably high rate of growth in irrigable land area, the newly opened up lands were not so intensively used to the extent envisaged.

This paper primarily focuses on the key issues concerning the intensity of the use of irrigable lands in Sri Lanka, mainly to establish the emerging trends and to determine underlying causes. The findings of the paper suggest that at present, there is substantial underutilization of irrigated lands, particularly in the dry zone. Except in relatively few locations, irrigated lands are almost exclusively cultivated with paddy, both in yala and maha seasons. The investigation shows that in the wet zone, all paddy lands are virtually double cropped. In the dry zone, however, the extent of double cropping paddy lands is determined mostly by the adequacy as well as by the reliability of the water source. The highest proportion (60%) of double cropped land is seen in lands cultivated under major irrigation schemes. However, in the rainfed areas and minor irrigation schemes a single cropping, during the maha season, is still seen.

The data indicate that in absolute terms, the extent left uncultivated in the yala season increased from 269,000 acres in early 1950s to about 705,000 acres in early 1980s, and the bulk of these lands lies in the dry zone. Therefore, from a national standpoint, the best alternative to increase land productivity lies in cultivating a second crop in those lands during the yala.

The study establishes a mix of factors that have led to the present problem of low cropping intensity of irrigated lands in the Dry Zone. Such factors basically involve (a) environmental (b) economic and (c) technical constraints.

Of these constraints, the most binding appears to be the lack of adequate water supplies during yala season. The problem, to a large extent, can be overcome by cultivating non-rice field crops in paddy fields during this season. These crops require significantly less water than paddy and hence, pose relatively less water related problems. This approach has therefore, for a long time been pursued very actively by the extension services as a potential means of increasing land use intensity in the Dry Zone. Despite this, the current level of farmer acceptance of this strategy has left much to be desired. This is mainly due to lack of economic profitability and production risks associated with the cultivation of non-rice crops.

The investigation therefore, suggests that in the long-run a more stable, policy option for improving the land use intensity of the Dry Zone lies mainly in providing better marketing facilities for the Dry Zone farmers through the adoption of appropriate import and pricing mechanisms.

PAPER VI

Returns to Investment in Irrigation Rehabilitation
A Case Study on
Gal Oya Water Management Project

W.M. Tilakaratne

One of the main objectives of the Gal Oya rehabilitation and water management project was to increase agricultural production and employment. The USAID project paper anticipated that by the end of life of the project (5 years) a carefully designed, controlled and monitored water management programme will have established the base for a highly productive and energized system of agriculture which will serve as a model for the rest of the country.

Due to increased storage of water, in Senanayake Samudra, and also due to reliable water delivery and better operational practices and on-farm water management it has been made possible to bring a higher acreage under cultivation during the yala season since 1984. With the possible completion of physical rehabilitation work in 1986 it is more likely that this upward trend in cropping intensity and land productivity will continue. Based on the likely behaviour of farmers to increase their efforts and investments in paddy agriculture under improved water availability it is projected that the cropping intensity will increase from the present level of 175% to 188% in the 7th year and remain constant thereafter. This may be possible to achieve since the yala 1985 has already reached about 46,500 acres under irrigation and with only about 75% of rehabilitation work completed. Since much of the work in tail-end area of the LB system and field channel construction work in most parts are yet to be completed, the area under irrigation can be expected to increase to about 55,000 acres during yala.

The average annual yield is expected to increase from the present level of 60.5 bushels to 92.1 bushels in the 20th year. This would be a very modest target under present conditions and in the context of already achieved high levels during the early stages of rehabilitation work in Gal Oya LB.

PAPER VII

Spontaneous Encroachments in Directed Irrigated Settlement
A Case in Economic Co-existence

by

R.D. Wanigaratne

In the face of increasing food and fibre needs, and employment and income needs in a population which is growing at a rate approximating 2 percent per year, no longer can the available reservation lands in settlements be treated as a "non-exclusive" resource open to unlimited influx of encroachments. Yet, unless and until employment and income opportunities diversify beyond agriculture, and while encompassing regions of settlements remain relatively "depressed", such encroachments will continue to increase with each succeeding settler generation. Therefore, encroachments should be seen as products of broader failings in the national economy.

The best policy under the circumstances in which settlement based encroachments are placed is to "help" these encroachments and their residents to better themselves through a higher incorporation into the intra-settlement land, irrigation and production process management systems. Changing technology, crop diversification, and aggregation of "encroached" plots in a State initiated consolidation action, should increase investment choices for the encroachers. Consequently, dimensions of utilisation of the exclusive resource, viz., irrigated settlement lands, would increase.

SESSION 3

INSTITUTIONAL ASPECTS OF IRRIGATION WATER MANAGEMENT

PAPER VIII

The Development of Institutional Arrangements for Irrigation Water Management in Village Irrigation Systems in Sri Lanka

Shyamala Abeyratne

Since the late 1960s the Government has come to recognise the advantages of investing in minor irrigation schemes with a view to obtaining quicker returns to investment, broadening the distributive base of state funds and reaching small and marginal farmers. Alongside with this investment in physical rehabilitation are attempts to introduce institutional mechanisms for improved water management. These innovations in institutional mechanisms have borrowed from past experiences in irrigation water management which are deemed to have been successful.

Even if the past experiments were successful they cannot be replicated with the same degree of success today as the social and economic fabric of small tank communities is not what it was five to six decades ago. It has changed radically. The major features of this change are concentration of wealth and power, disintegration of traditional social ties and kinship patterns and a shift from communal to more private, individualistic modes of resource use and control. The manner in which the state intervened in village irrigation systems has had much to do with these outcomes.

Therefore as to whether the state should try to reintroduce the same (or similar) institutional arrangements as in the past is a matter for serious debate.

PAPER IX

Irrigation Management and the Financing of Irrigation Services Institutional Considerations

Leslie E. Small

Policies for financing irrigation services can affect on the management and performance of irrigation systems. More important than the specific nature of the financing mechanisms used are the institutional arrangements establishing responsibility for the four key processes of allocating resources to irrigation, implementing irrigation services, collecting resources from beneficiaries, and controlling the resources collected. If a financing mechanism is to improve system performance through encourgaing better management, a degree of financial autonomy is needed to link the provision of the irrigation services with the collection of and control over resources from the water users. Likewise, if a financing mechanism is to improve system performance by encouraging the active cooperation and involvement of the water users in O & M, the mechanism must give the farmers a sense of ownership of the irrigation system by giving the water users a clearly defined and accepted financial responsibility for a portion of the capital costs. This implies both an institutional context of financial autonomy, and the involvement of the potential water users in the planning and decision-making process prior to the construction of the project.

In the absence of any significant degree of financial autonomy for the agencies that provide the irrigation services, mechanisms obtaining resources from the water users may be justified on fiscal or income distribution grounds; however, it is unlikely that they will have any significant positive effect on irrigation performance.

PAPER X

Farmer Participation in Irrigation Water Management

S.M.K.B. Nandaratne

Successful irrigation water management requires farmer participation. Although farmer participation may vary from scheme to scheme maximum benefit through this process could be obtained if only continuous dialogue between water users and the bureaucrats could be maintained. Cordial relationships established between officers and water users ensure maximum productivity of water and safety of physical structures and also peace and amity in the community. For an effective farmer participation there must have a power base at the lowest community decision making level. This will pave the way to an overall development of potentialities of farmers, as a result of which socio-economic progress is feasible in the community at large.

PAPER XI

Some Observations on the Operation of the Wattai-Vidane
A Contemporary Version of a Traditional Institution for Water Management

N.P. Kasynathan

While certain administrative as well as statutory developments during the recent past seem to have led to the attenuation or abandonment of the Institution of Irrigation Headmen in most parts of the Island, the Tamil speaking areas of the present Amparai and Baticaloa Districts seemed to have some how provided conditions for its preservation. The paper presents some observations based upon a study of the operation of the Wattai Vidane (WV) as these irrigation headmen are called in the Tamil speaking areas of the Gal Oya Left Bank (GOLB) and in parts of the river division all of which together constitute the study area. The study reveals that the WV performs to the satisfaction of most farmers those functions which could be seen as inward looking functions while they had serious difficulties in succeeding in what could be as outward looking functions. However in the course of the study we have come across problems in the institution as it functions now which make it incapable of performing tasks which are well within its inward looking role. A discussion of this feature along with the deficiencies associated with outward functions leads to some suggestions to the system of Irrigation Headmen as it was originally revived by the British. Some of the provisions made then for the working of this institution, have been abandoned and it is suggested that restoring them in a modified form may be useful.

SUGGESTED FURTHER AREAS FOR RESEARCH

In the panel discussion the following areas were identified for further research.

i How to enhance the capacities of agencies for better management of irrigation systems?

ii How to improve and sustain irrigation systems in a cost-effective manner?

iii What are the appropriate forms and types of farmer orgnizations under irrigation systems?

iv How to mobilise O & M resources in a way that would foster the sustainability of the system and also provide incentives for better management?

v How to sustain the economic viability of commercial small farms?

vi How to enhance the productivity and the economic viability of minor tanks?

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