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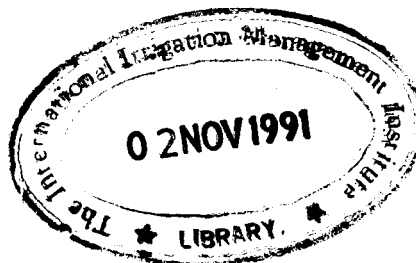
INTERNATIONAL CENTERS WEEK

OCTOBER 28 - NOVEMBER 1, 1991

WASHINGTON, D.C.

**INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE (IIMI)
PRESENTATION TO THE CONSULTATIVE GROUP ON
INTERNATIONAL AGRICULTURAL RESEARCH
WASHINGTON, DC, 31 OCTOBER 1991**

ROBERTO LENTON, DIRECTOR GENERAL, IIMI



Mr. Chairman, Ladies & Gentlemen:

It is a great pleasure for me to have the opportunity to speak to you today, and to share with you some thoughts about IIMI and its contribution to the CGIAR system.

In my talk, I will cover five principal topics. First, I will outline why irrigation is vital to global food production, and why it will become even more crucial over the next several decades. Second, I will describe how water is becoming steadily scarcer, and why the performance of irrigation is far below what it should be. In addition, I will note that the current world-wide research base for improving the effectiveness of water use is very limited. Third, I will tell you about IIMI's mission to improve the effectiveness of water use in irrigation, and its strategy for doing so. Fourth, I will describe how IIMI, even though small and new, has begun to produce important results. Finally, I will summarize why, at its current stage of development, IIMI is in need of carefully planned growth, and of more balanced funding to enhance its effectiveness.

Let me begin by discussing the role of irrigated agriculture in global food production.

1. IRRIGATION IS VITAL NOW TO FOOD PRODUCTION, AND WILL BE EVEN MORE CRUCIAL OVER THE NEXT SEVERAL DECADES.

Irrigated agriculture is already vital to the nutrition of the world's poor. TAC has estimated that 2.4 Billion people are currently supported by irrigated agriculture -- more than the total supported by all other forms of agriculture and by fisheries. In the 1960s and 1970s, when the increase of cereal output in South Asia was running at an impressive 3.4 Percent per year, more than two thirds of this growth was attributable to irrigation. Today, 55 percent of the world's output of wheat and rice is accounted for by irrigated production.

But irrigated agriculture will become even more important in the decades to come. The World Bank estimates that although it will take an average annual growth rate of 2% in agriculture as a whole to feed a world population estimated to reach 6 billion by the year 2000 and 8 billion by the year 2025, the growth rate for irrigated agriculture will need to be 3% per year.

To meet increased demand, the proportion of the world's production of wheat and rice grown under irrigation must increase from 55% today to 65% by the year 2000. By the year 2025, irrigated agriculture will need to contribute at least 80% of the additional food needed. And this is just one generation away!

2. WATER FOR IRRIGATION IS BECOMING STEADILY SCARCER; AND THE PERFORMANCE OF IRRIGATION SYSTEMS IS FAR BELOW WHAT IT SHOULD BE. THE RESEARCH BASE FOR DEVELOPING ENVIRONMENTALLY SOUND AND LASTING IMPROVEMENTS IN IRRIGATION MANAGEMENT IS VERY LIMITED.

But the potential for irrigated agriculture to help meet the world's food demands is threatened by two factors. The first is that water amount and quality are deteriorating because of skyrocketing uses. The second is that irrigation systems are not performing as expected.

As this audience is only too aware, water is becoming scarce, and competing demands for its use are growing. In more and more parts of the developing world, already there is not enough water to allow farmers to maximize crop production, while the quality of irrigation water is deteriorating. The need for improving the effectiveness of water use is, therefore, becoming greater each day.

The variety of irrigation types is considerable, ranging from large, centrally administrated canal irrigation systems, to small schemes managed by individual farmers or groups of farmers. However, in large and small systems, in arid countries and in areas blessed with abundant water, the productivity, equity and sustainability of irrigation systems is far below expected levels. Despite huge expenditure of imagination, financial resources and human labor, the dreams of irrigation designers, national planners and farmers are most often unrealized.

In many systems, the area irrigated is much less than the area theoretically commanded. Water is often unevenly distributed, with farmers near the source receiving far more water than their downstream neighbors. Water deliveries to farmers rarely correspond in quality and timing to the requirements of the farmers' crops. And perhaps of most concern, in many systems water logging and salinity induced by irrigation are threatening the sustainability of irrigated agriculture.

As a result, cropping intensities are lower than expected, production increases are disappointing, and farm community incomes do not rise as much as they should. In sum, most irrigation farmers of the developing world are having to practice agriculture with less than optimally functioning irrigation.

Unfortunately, largely for historical reasons, there is a very limited and inadequate research base for understanding how to improve this situation. Irrigation management, as distinguished from the design of water distribution systems, has been largely neglected from a research point of view. In most developing countries, national scientific capacity to conduct research on irrigation management is weak and fragmented -- much more so, in general, than capacity in crop production and other areas of agricultural research. Much of the research done by national systems in the area of irrigation management is of a single discipline, studying one or a few aspects of an irrigation system in relative isolation. Even those countries that have well established national commodity research systems do not have an equivalent national irrigation management research capacity.

The dilemma the world faces is thus clear. Improvements in the productivity of irrigated agriculture are urgently needed if we are to meet the developing world's future food demands. To achieve productivity gains in the face of growing water scarcity, environmentally sound and lasting improvements in irrigation management must be found. But the research base required to address this need is dramatically inadequate.

This, in a nutshell, is the rationale for IIMI's establishment, and the rationale for IIMI's membership in the CGIAR system. Without an effective international irrigation management research effort, global prospects for achieving needed improvements in irrigated agriculture are dim.

3. IIMI HAS A MISSION TO IMPROVE THE EFFECTIVENESS OF WATER USE IN IRRIGATION, AND A STRATEGY FOR DOING SO.

Let me turn now to IIMI's mission, and the way in which this mission is achieved.

Simply put, IIMI's mission is to strengthen national capacity to enhance the productivity of irrigated agriculture.

How does IIMI carry out its mission? By three interrelated approaches:

First, by conducting collaborative research, with colleagues from developing countries, on the ground in existing irrigation systems, to seek environmentally sound and lasting improvements in irrigation management in actual settings;

Second, by pulling together the results of specific research -- carried out by IIMI and by others -- to develop advances in generic or thematic knowledge that may be disseminated and applied widely to irrigation systems;

And third, through training and dissemination activities as well as collaborative research, to help build national irrigation research and management capacity.

IIMI's approach therefore includes the three principal activities -- research, training, and information dissemination -- that have characterized the CGIAR system since its inception. However, the way in which these activities are carried out has some special features.

The first feature is that, since little of significance about irrigation management can be studied in a laboratory or experiment station, IIMI must place its staff in direct contact with diverse irrigation management situations in the field. For this reason, about half of IIMI's scientists are outposted in field offices situated in key countries in the developing world. From the development of a memorandum of understanding, the establishment of a consultative committee, and the planning of research activities, IIMI's resident scientists work hand in hand with national managers and scientists. As a result, IIMI's relationships with national programs are close and effective.

But field research is only part of IIMI's approach. The field staff is complemented by a multi-disciplinary group of headquarters-based staff whose primary purpose is to pull together disparate lessons learned from many settings, and, within a coherent thematic framework, develop information of practical use to the irrigation community.

This combination of collaborative research on existing irrigation systems and thematic research aimed at global learning constitutes the institute's primary approach to achieving its research objectives.

The second unusual feature of IIMI's approach is that IIMI engages in training and capacity building at both the research and management levels. Thus, IIMI works to strengthen both the national research institutions and the organizations responsible for the management of irrigation systems. In doing so, IIMI must achieve two things. It must help improve overall organizational capacity. And, it must help develop the human resources needed to build and sustain effective national management and research organizations.

IIMI's information dissemination activities also have this same two-fold thrust: our information products are aimed at both the national irrigation research systems and the national irrigation management agencies.

Together, research, training and information constitute IIMI's operational strategy. Even though IIMI is a small organization, its activities are high-leverage. Joined with vigorous national activities, one can foresee IIMI contributing substantially to the evolution of a steadily stronger international system of irrigation research and its application.

IIMI's operational strategy to seek environmentally sound and lasting improvements in irrigation management requires two things: a broad vision of the future and understanding of the factors that influence the productivity and sustainability of irrigated agriculture, and a tightly focussed research agenda. Irrigation management is highly complex, involving issues that range from the physical movement of water in canal systems to policies and institutional arrangements that influence effective water use. As a small organization, with very limited resources, IIMI must continually make difficult choices of where to concentrate its research. While the research agenda will gradually evolve as we seek more effective ways to address our vision of the future, at present IIMI has selected six issues to which it gives the highest research priority.

The first issue is the development of practical means for measuring the performance of irrigation systems. These do not now exist, even in the industrialized countries. Yet the use of water can hardly be improved without clear and agreed means for measuring outcomes.

The second issue is how to improve the delivery of water for irrigation. As I noted earlier, water deliveries to farmers rarely correspond in quantity, quality and timing to the requirements of the farmers' crops. How can these conditions be improved?

The third issue is how to bring about change in irrigation organizations. At present, the management processes employed by most irrigation

management organizations are not conducive to improving performance and cost effectiveness. Achieving lasting improvements in irrigated agriculture therefore depends vitally on improvements in the management processes of irrigation organizations.

The fourth issue is how to improve the policies and overall institutional arrangements that govern irrigated agriculture. A very topical question is whether and how to turn over management authority from government agencies to farmers. This question is of overwhelming interest to most developing country governments.

The fifth issue is how to help farmers participate effectively in irrigation management and how to ensure that the productivity, incomes, and quality of life of low income farmers (especially women) can be enhanced through better irrigation.

Finally, the sixth issue is the development of stronger links between the requirements of irrigation management and the elements of sustainable environmental use. Key research topics include the impact of irrigation on the environment, the reduction of water-borne disease and other health issues, and trade-offs among economic efficiency, sustainability and equity.

4. EVEN THOUGH IIMI IS SMALL AND NEW, IT HAS BEGUN TO PRODUCE IMPORTANT RESULTS.

Let me turn now to the output and impact of IIMI's work. As CG Centers go, IIMI is quite young, and we have a long way to go. However, in our first seven years of full operation we are proud of several solid accomplishments. I would like to illustrate these accomplishments through three examples -- one on large-scale systems, another on small-scale systems, and a third on overall questions of irrigation policy.

My first example deals with managing irrigation systems to minimize waterlogging and salinity problems. Because of the vital importance of understanding the relationship between canal management practices and the sustainability of irrigated agriculture, in 1988 IIMI and Pakistan colleagues initiated a major research program on this subject. The specific objective of the study is to find which management interventions are likely to have the greatest potential to minimize incipient or emergent conditions of salinity and waterlogging in irrigated agriculture environments of Pakistan.

As part of the study, IIMI and national scientists have identified a spreading condition of secondary salinization in essentially non-saline agricultural lands caused primarily by irrigation with low-quality water. This condition has occurred mainly in those agricultural areas served by the canal system where persistent or increasing shortfalls between the intended and actual water deliveries are most pronounced.

As IIMI enters the "action research" phase of this project, a few interventions with the potential to enhance the sustainability of this irrigated agriculture system have been identified. For example, working with the punjab irrigation department, IIMI has demonstrated on one canal that, even within budgetary constraints, targeted maintenance can produce conditions that result in surface water deliveries much closer to the intended equity objective. Increased amounts of better quality canal water delivered to those areas now under-served by the canal system would permit farmers there to mix irrigation supplies. This would improve the average quality of water used, slow the rate of secondary salinization, and reduce its impact upon crop-yields. Several components of a decision support package to assist irrigation agency line officers in planning annual canal maintenance activities have been developed and pilot-tested, and are now ready for more extensive field trails.

My second example deals with small scale irrigation. Irrigation systems fall into two broad categories -- those in which principal management responsibility is exercised by governmental agencies, such as those I just referred to in pakistan, and those in which the farmers take on the management and decision-making processes themselves. This latter category -- now known as FMIS, for farmer managed irrigation systems -- has traditionally been overlooked, with serious resource allocation distortions. To help address this imbalance, since 1987 IIMI has been running a very successful global research network on FMIS. IIMI's initial work has shown that assistance to FMIS can be a cost-effective way to improve irrigated agriculture, particularly in resource poor and marginal areas.

Today the FMIS network:

- links 1300 professionals in 75 countries
- organizes workshops to facilitate interaction among researchers, practitioners, implementing agents and donors
- promotes exchange of experience among irrigation professionals in different countries

- publishes and circulates the fmis newsletter to network members

in the four years since its establishment, the results of the FMIS network have exceeded expectations. Irrigation practitioners and researchers across Asia, Africa, and Latin America now recognize the importance of farmer managed systems. And lessons learned from the FMIS sector are proving useful to those concerned with the privatization and turnover of publicly managed systems.

My third example deals with irrigation policy. Irrigated agriculture often suffers because there is no clear vision of policy to govern such matters as the role of farmers in irrigation management or the recovery of operation and maintenance costs. This has led in many countries to a fragmented and contradictory set of policies and institutions which often work at cross purposes. IIMI has been afforded a unique opportunity in its host country, Sri Lanka, to assist in the development of policies on irrigated agriculture and their implementation. These policies will determine irrigated agriculture development and practice in Sri Lanka well into the 21st century.

The work involves review and transformation of all aspects of policy and institutional development. IIMI's role is:

- to assist in preparing a series of working papers and draft policy documents intended to contribute to refining the government of Sri Lanka's participatory irrigation management policy and its implementation strategy
- to participate in committees planning and overseeing the activity
- to facilitate a series of policy-oriented workshops designed to achieve consensus on policy refinements.

IIMI anticipates that its collaborative work in Sri Lanka will assist other countries seeking to improve their policies for irrigated agriculture.

Through the results of these and other programs, IIMI is beginning to achieve impacts -- impacts that can be seen in changes in policy, management, and technology choices by client agencies; changes in

research approaches by national research programs; and overall strengthening of national institutions. IIMI is conscious of the need to develop evaluation techniques appropriate to its mission, and to document the results and impacts of its work.

As part of this documentation work, I personally maintain an "impact file", to which iimi staff regularly contribute. Submissions this year have ranged from the impacts of an iimi - world bank workshop, to our influence in developing a new vision for irrigation in Sri Lanka, to our role in opening up the subject of irrigation privatization in Sudan.

5. **IIMI IS A NEW, SMALL ORGANIZATION THAT HAS DEVELOPED RAPIDLY SINCE ITS ESTABLISHMENT IN 1984. IT IS GREATLY IN NEED OF SUPPORT FOR CAREFULLY PLANNED EXPANSION, AND OF MORE UNRESTRICTED FUNDING TO ENHANCE ITS EFFECTIVENESS.**

I'd like to say a few words now about our organizational development and future needs.

IIMI has evolved considerably since 1984, when we began work in digana, in central Sri Lanka, with a handful of researchers. Today, we are a center of some 30 senior international staff, with a budget of 7.5 Million dollars. Thanks to the generosity of the Government of Sri Lanka and several donors, IIMI has been provided with outstanding new headquarters facilities near Colombo, into which we will be moving by the end of the year. And we now have resident field programs in ten countries of Africa and Asia.

Our work started in Asia, which has the largest concentration of irrigated agriculture in the developing world. Today we are working in direct collaboration with scientists in Sri Lanka, Pakistan, Bangladesh, Nepal, the Philippines and India.

Exploratory activities in Africa began in 1986. In 1991, IIMI has solid collaborative programs underway in Sudan and Morocco, and in Burkina Faso, Nigeria and Niger. Collaborative work in Latin America is planned for the coming years.

Our international staff now come from 16 different countries, supported by very effective national staffs. Our collaborators now include the governments of 10 countries; the managers and users of some 20 irrigation systems; and the staff of perhaps 30 national and international research

institutions. The latter includes sister IARCs, and other key organizations such as the International Program on Technology Research on Irrigation and Drainage (IPTRID).

IIMI has therefore evolved substantially since its beginning some seven years ago. But IIMI's Board and management believe further evolution is necessary if IIMI is to effectively achieve its mission. In this connection, I would like to make two important points about IIMI's future as the Board and management see it:

The first point is that IIMI should continue for several years yet its current stage of relatively substantial annual growth. IIMI's growth plans are careful and moderate in terms of the size of the problems IIMI is addressing, and in terms of prudent management of a growing research portfolio. But those growth plans are real and, in IIMI's view, vital.

The second point is that IIMI badly needs to achieve a better balance between unrestricted and restricted funding. Since IIMI has had to start its life as a non-associated center, the share of its budget that is supported by unrestricted funding is currently only about 25%, whereas the customary proportion of unrestricted funding for most of the older and larger centers in the CGIAR system has been 75% or more. The low proportion of unrestricted funding means that IIMI's program is dominated by the availability of project funding. IIMI has not yet had the opportunity, so carefully protected throughout the CGIAR system, of selecting a major share of its own research agenda. Indeed, for much of IIMI's life, it has been in the unhappy position of having to use a substantial share of its very limited unrestricted funds to pay the indirect costs of projects for which some donors were only willing to pay direct costs.

Now that IIMI has joined the CGIAR system, we hope that these unfortunate limitations will no longer hamper our work in the way they have in the past.

6. THREE CONCLUDING MESSAGES

Let me close by leaving you with three key messages.

The first is that improving the productivity, equity, and sustainability of irrigated agriculture, by enhancing the effectiveness of water use, will be of vital concern to global agriculture in the years to come. IIMI is thus a crucial component of the expanded CGIAR system.

The second is that, both because it is addressing key issues of global significance and because its pragmatic approach is strongly oriented towards collaboration with national programs, IIMI has much to offer to the CGIAR system, and the potential to be an important contributor to the achievement of CGIAR goals.

And the third message is that, to enable us to fulfill this potential, IIMI needs your support. In particular, we need your support and understanding in this crucial period of transition into the CGIAR system, so that we too may have the wherewithal to select our research agenda in pursuit of the CGIAR's goals.

Thank you very much.