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CIMMYT's 20th Anniversary: A Commemoration



maize and wheat for the third world

Contents

- 1 Preface
- 2 Welcoming Address
G. Vallaeys
- 6 Welcome on Behalf of the Government of Mexico
M. Villa Issa
- 8 CIMMYT and the International Community of Science
S.S. Husain
- 13 Tribute to Virgilio Barco
D.L. Winkelmann
- 19 Investing in the Future of Agricultural Research
T. Naito
- 22 Toward a World without Hunger
R. Sasakawa
- 23 The Human Element: CIMMYT Training
H.M. Hepworth
- 27 Expanding Training Opportunities and Resources
W.C. James
- 31 Mutual Goals, Mutual Growth: Mexico and CIMMYT
E. Pesqueira
- 34 CIMMYT's Contributions to World Agriculture
D.L. Winkelmann
- 38 Inauguration of the Norman E. Building
M. de la Madrid
- 39 20th Anniversary Participants

Preface

“On this, the 22nd day of September, 1986, I formally inaugurate the Norman E. Borlaug Building, dedicated to training agricultural scientists from all over the world.”

With these words, Miguel de la Madrid, President of Mexico, formally dedicated the new training, conference, and information center that bears Norman E. Borlaug’s name. The building is the gift of the Japan Shipbuilding Industry Foundation and the Government of Japan, and its function is to promote the training of Third World Agricultural Scientists and the exchange of information among all groups served by CIMMYT.

The distinguished guests who gathered to commemorate CIMMYT’s founding and honor Norman Borlaug also came together to affirm their continuing commitment to the goals of CIMMYT. One common note sounded by speakers at the celebrations was an acknowledgement of the considerable achievements of the past. But a cautionary note was evident in their words as well. The speakers—colleagues, benefactors, and collaborators from outside the Center, as well as Center staff—emphasized the necessity of moving forward, of consolidating and expanding upon past accomplishments by thoroughly preparing for future demands on CIMMYT’s services and resources.

Many participants in the opening ceremonies acknowledged that the challenges the Center will face in its next two decades are even more formidable than those of the past twenty years, and that the global community of agricultural development specialists will have to marshal all of its knowledge and energy to confront those challenges.

The new training facility at CIMMYT reflects an awareness that continued development of human resources is essential if the demands of the future are to be met. The aid of donors and of colleagues in national programs is also instrumental to future success, and the guests who arrived to celebrate the 20th anniversary once again affirmed their commitment to CIMMYT’s work and to that of the Consultative Group on International Agricultural Research. Their words, reproduced here, are but one token of their faith in CIMMYT and, more important, in the future of the Third World.

Welcoming Address

G. Vallaeys

Chairman of the Board, International Maize and Wheat Improvement Center, Mexico

As Chairman of CIMMYT's Board of Directors, it is an honor as well as a pleasure to welcome you to CIMMYT on the occasion of this Center's 20th anniversary.

I can't help mentioning, at the outset of this address, how impressed I am by the considerable and outstanding audience here convened.

From so many notable persons and the countries or institutions that they are representing, the positive response to CIMMYT's invitation to attend this celebration is to be considered by the Center's staff, management, and governing board as a sure token of interest, and as valuable encouragement.

Of particular significance for us, of course, is the decision made by President Miguel de la Madrid Hurtado to join the celebration later today. We regard his presence, along with the participation of distinguished members of the Mexican Government, not only as an immense honor, but also as a gratifying expression of the way the authorities of CIMMYT's host country are viewing their continuing relationships with the Center and with the international system of which it is a component.

Today, and during the next two days, a series of events and discussions will be held to mark this anniversary. But before we devote our attention to these proceedings, it is appropriate to consider why we have chosen to focus attention on CIMMYT's 20th.

You will probably agree that 20 years is a significant amount of time in the life of almost any institution. It is long enough for an institution to have forged a distinct identity and set of goals, and to have made progress toward accomplishing those goals. For this reason, CIMMYT's 20th year provides a special vantage point from which to acknowledge the achievements of the past and to contemplate the opportunities of the future. Furthermore, this anniversary coincides with the completion of a major new facility, the Norman E. Borlaug Training, Conference, and Information Center, whose introduction to CIMMYT's donors, clients, and staff is, in itself, cause for a gathering. What could be more appropriate than to combine these events, the dedication of a new building in the name of CIMMYT's most revered personality, and the examination of CIMMYT's future in the context of its past two decades?

We celebrate CIMMYT's founding on April 12th, 1966 not only because the Center is now 20 years old. We are also recalling the responsibilities that the Center assumed at its creation. The signing of CIMMYT's charter was a public acknowledgement of the Center's pledge to assist its clients, Third World crop research programs, and ultimately their clients, the farmers. It is this we commemorate here—not just the Center's existence, but the reasons for its existence.

The two major events of this celebration—the dedication of this new facility and the Symposium—provide a useful framework for noting and assessing what CIMMYT has done to fulfill the commitments it made in 1966 and during subsequent years. These events highlight themes and concerns that have been, and will continue to be, central to CIMMYT's operation and identity.

Today's dedication of the Norman E. Borlaug Building is a sign of the international community's affection and respect for one of the Center's founders. Of equal importance is the Building's purpose. These new training, conference, and information facilities are here because of CIMMYT's longstanding commitment to the development of human

resources and to the international exchange of research products and procedures. These facilities also reflect CIMMYT's efforts to increase the variety and quality of training, conferences, and information services.

The signing of CIMMYT's charter was a public pledge to assist Third World agricultural research programs and, ultimately, the farmers who are their clients.

The second major event marking CIMMYT's 20th anniversary is the Symposium on the Future Development of Maize and Wheat in the Third World. The topics of the Symposium cover germplasm development, increases in productivity, production agronomy, national food policies, human resource development, and strengthening national research programs. The anniversary provides the motive force for bringing together internationally known authorities to address these issues and discuss their implications for the future direction of CIMMYT's research.



The invitation of these authorities points to another function of the Symposium: the introduction and integration of external points of view into CIMMYT's planning process. This kind of exchange among colleagues is important for several reasons. First, it promotes cognizance of the mutual objectives and concerns of persons working within and outside of the Center. Second, it brings new thinking to bear on CIMMYT's activities, so that the Center remains aware of new opportunities for research. Such awareness helps preserve the Center's capacity to adapt to the varied and changing needs of its clients. Finally, the Symposium offers an opportunity to synthesize various perceptions of CIMMYT's past 20 years and its future role as well.

We can better understand the task of the Symposium participants, and of CIMMYT itself, if we consider just a few of the changes that have occurred in international agriculture during the past two decades, and the changes that are expected to occur in subsequent decades. During the past 20 years, the understanding of agriculture's role in developing economies has changed greatly. Today there is an increased awareness of the necessity of devoting resources to agriculture, and especially to agricultural research, in developing nations. Another change has taken place in research methodologies, which have been transformed

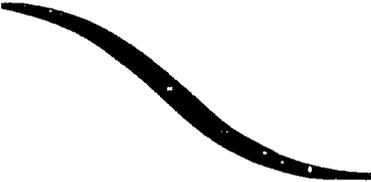
by new perceptions of the needs of national agricultural research systems and their clients, the farmers. Among the examples of such change is the accent on on-farm research, in which greater attention is given to developing agricultural technologies to fit the needs of representative groups of farmers. Finally, another signal change over the past 20 years has taken place in national crop improvement programs themselves. Their capacity to conduct research has increased markedly, as has their need for more sophisticated, specific kinds of collaboration. All of these changes have implications for the future of international agricultural research and such centers as CIMMYT.

Because CIMMYT's future research agenda will be influenced to a large extent by what has already been accomplished, it is worth reviewing some of those accomplishments here. They are quantitative as well as qualitative. The quantitative achievements are well known. CIMMYT's improved germplasm has made a significant impact on agricultural productivity in the developing world. A large number of former CIMMYT trainees have assumed responsible positions in their national crop improvement programs. Many procedures developed and refined at CIMMYT have enhanced the research capabilities of national

program staff. Consultation and the dissemination of research results have increased the awareness of new research methods.

The qualitative achievements are less tangible than those just mentioned, but they are equally important because they comprise a prologue to the future. Training and research networks established by CIMMYT have contributed significantly to creating a sense of international cooperation that is not limited by political or geographic boundaries. The accomplishments

of these networks provide a motivation for further cooperative efforts. And most important, the success of cooperative research produces an attitude that problems *can* be resolved, and that conditions can be changed. This is a valuable legacy as we prepare to confront the challenges of the next two decades. Certainly CIMMYT is to be commended in its 20th year for the role it has played in providing us with this legacy, and I am sure you will join me in offering this Center our sincere best wishes for its future success.



Welcome on Behalf of the Government of Mexico

M. Villa Issa

Under-Secretary of Agriculture, Mexico

On behalf of the Mexican government, and in particular the Secretary of Agriculture and Water Resources, Eduardo Pesqueira Olea, I am honored to welcome all of the distinguished visitors here today to celebrate the 20th anniversary of CIMMYT and the inauguration of the Norman E. Borlaug Training, Conference, and Information Center.

Recognizing the important role of agriculture in economic development, the Mexican government has promoted research programs aimed at increasing production in the farm, livestock, and forestry sectors, as well as raising rural living standards.

In the process of economic development that took place during the 1970s, agriculture played an increasingly important role in development programs worldwide. New advances in knowledge contributed to the quantitative and qualitative growth of the livestock, farming, and forestry sector. The accumulation of knowledge in basic science, as well as the development of applied technology, are closely related to changes in this sector's productivity.

In this process, the International Maize and Wheat Improvement Center (CIMMYT) has played an outstanding role in developing and disseminating agricultural knowledge throughout the world. The results of that work are here before us.

The interdisciplinary approach designed to develop technology appropriate to farmers' goals and the constraints of existing production systems has been tremendously successful in solving the specific problems of farmers.

Mexico's National Program of Integral Rural Development provides for the promotion of basic, applied, and technological research with the aim of achieving increased production in farm, livestock, and forestry activities, as well as raising rural living standards. The Mexican government has promoted research programs by means of three specific measures:

- First, the establishment of a system in which both the public and private sectors will participate to plan and conduct research programs;
- Second, broad support for research institutions; and

- Third, a financial support package for private firms taking part in research projects.

This is a great task, since we are well aware that the fundamental element in achieving self-sufficiency in food production in our country is the strengthening of research institutions and their training and extension programs.

Finally, it gives me great satisfaction to see the professionalism as well as the universal humanistic spirit evident in each and every one of you, and I have no doubt that the outcome of this gathering will be worthwhile.

I want to welcome you and wish you great success, and I hope you enjoy the hospitality of the Mexican people and their government.

CIMMYT and the International Community of Science

S. Husain

*Chairman, Consultative Group on International Agricultural Research,
Washington, D.C., USA*

Today we celebrate the 20th anniversary of CIMMYT, a center with an impressive record of accomplishments. I also want to pay tribute to the pioneering relationship between the far-sighted national agricultural research program of Mexico and a small group of Rockefeller Foundation scientists. The entire Consultative Group on International Agricultural Research (CGIAR) system owes its existence to the approach used in the Mexican-Rockefeller Program that began in 1943—that of scientists from different countries working together to solve major agricultural problems. So today I want to recognize both the forerunner of CIMMYT, the joint Mexican-Rockefeller Foundation Program, and its famous offspring, CIMMYT itself.

In 1960, Mexico initiated the National Institute for Agricultural Research (INIA) which was, and still is, responsible for carrying out agricultural research for Mexico. This was an important step in moving international agricultural research forward. For with a national system in place to promote food production efforts for Mexico, the Rockefeller researchers formerly involved in the cooperative program began to look at applying their successful research techniques to other countries of Latin America and Asia. This research involvement with Latin American countries has continued over the years and is still a pillar of CIMMYT research.

Also in 1960, the Ford and Rockefeller Foundations established the International Rice Research Institute (IRRI) which was patterned after the Mexican-Rockefeller Program. In 1962, Adolfo López Mateos, President of Mexico, visited IRRI and was impressed with what he saw. With his help and the help of Julian Rodríguez Adame (Minister of Agriculture and Livestock) and other individuals, CIMMYT was created by the Rockefeller and Ford Foundations as an international center in 1966. Two additional centers, the International Institute of Tropical Agriculture (IITA) and the Centro Internacional de Agricultura Tropical (CIAT) were also founded in the late 1960s. By this time it was apparent that still other centers would be beneficial, and in 1971 the CGIAR was formed by 15 donors as an informal group cosponsored by the World Bank, the United Nations Development Programme (UNDP), and the Food and Agricultural Organization (FAO). The success of IRRI and CIMMYT was the motive force that stimulated the creation of the CGIAR. From the four original centers supported by 15 donors, the system today has evolved into a system of 13 centers supported by 41 donors. Mexico was one of the system's earliest supporters, and more recently has become a donor member, one of six developing countries to play that role.

Let's look briefly at the original program and the individuals who worked so effectively in bringing about the successes associated with maize and wheat breeding in Mexico.

Marte R. Gomez was Minister of Agriculture and Livestock in 1943 and played a key role in initiating the cooperative Mexican-Rockefeller Foundation Program. George Harrar arrived in Mexico in that year as the first staff member and director of the joint program. He was followed by Edwin Wellhausen, who headed the maize program, and Norman Borlaug, who headed the wheat program.

In 1944, wheat yields averaged 675 kg/ha in Mexico, which imported half the wheat it consumed. The new semidwarf wheats were released in 1961, and by 1966 over 95% of the wheat area cultivated in Mexico was planted to these new varieties. By 1969, wheat yields had increased to 2400 kg/ha, and Mexico had become self-sufficient in wheat production. These new varieties were also spreading around the world with equally impressive high yields, particularly in India and Pakistan where Norman Borlaug worked with the national programs.

As you all know, in recognition of his service to agriculture Norman Borlaug won the Nobel Peace Prize in 1970. He conducted much of

the early research at the experiment station in the Yaqui Valley. At that time wheat crops in the Yaqui Valley were being destroyed by disease, and Borlaug had to prove to the farmers that his varieties had more potential. By 1955, the farmers had adopted Borlaug's methods and donated some of their land for the current research station, the Yaqui Valley Agricultural Experiment Station of the Northwestern Agricultural Research Center (CIANO). Yields on the farmers' fields increased steadily; however, yields at the research station were even higher.

The CGIAR system owes its existence to the approach taken by Mexico's far-sighted national research program and a small group of Rockefeller Foundation scientists.

Through the efforts of Don Rodolfo Elias Calles, former governor of Sonora, the research station methods were transferred to the farmers. One of the important aspects of this transfer was the formation of a local farmers' organization called Patronato de Sonora. The Patronato, financed through self-taxation, supported research that was complementary to the wheat program at CIANO and also insured for its



members the availability of CIANO-produced seed. Today in the Yaqui Valley about 20% of Mexico's wheat is produced on approximately 1% of the country's cultivated land.

Dr. Borlaug has been quoted as saying that in the last 25 years the CIANO research station "has had a greater influence on food production than any other research station on the surface of the earth."

Maize research has been conducted in a variety of ways; however, it has had less dramatic results, in part because maize is grown under more diverse conditions than wheat. A key feature of the Maize Program has been the development of maize populations that are suited to certain agricultural environments. A notable development was the work of Elmer Johnson, who was the "father" of short-statured tropical maize. CIMMYT also works cooperatively with IITA and national programs in developing improved materials for specific environments. To date, more than 200 maize varieties incorporating CIMMYT germplasm have been released by national programs in 41 countries. And these varieties are now grown on over six million hectares in developing countries.

Many will agree that the overall approach to crop improvement worldwide has been profoundly changed because of CIMMYT and

its sister centers. We must ask: why did the Mexico-CIMMYT research program have such an impact on agricultural research? First of all, this was a new way of doing agricultural research in developing countries. Great efforts were made to obtain several generations of plants each year. To this end the program began what is known as shuttle breeding, using research stations located at different elevations and in different environments. This approach also tended to build in resistance to a wider array of pests and diseases and environmental stresses. I'm told the researchers were in the field every day working on crop improvement, and this strong emphasis on field research was passed on to the trainees who worked side by side with the researchers. Much of the research was done close to the farmers who were benefiting from it.

The orientation was toward early results. Steady gains, which were made from the beginning of the wheat research program, changed the way that people thought about agricultural research—it suddenly became an exciting and viable concept for increasing world food production.

The trainees who participated in the early research became the first members of the scientific partnership that today distinguishes the entire CGIAR system. The concept of an

“international fellowship of science,” which grew out of the cooperative Mexican-Rockefeller Program, and was furthered through the work of IRRI and CIMMYT, now covers the world and involves scores of research institutes, more than 100 nations, and thousands of scientists from both developing and developed countries. CIMMYT’s training program continues to emphasize the hands-on approach that it has used for the past 40 years. This approach has become the standard for the rest of the international agricultural research centers. The new training building, which we will be dedicating this afternoon, will enable CIMMYT to expand its current level of both in-service training opportunities and its activities in other countries.

More than 4000 agricultural scientists from 125 countries have received CIMMYT training. CIMMYT has expanded its fellowship program so that visiting scientists can spend more time in research at headquarters. These fellowships are intended primarily for national program collaborators, former trainees, and associate scientists on sabbatical leave—all partners in this global maize and wheat improvement network.

The network also places a strong emphasis on germplasm distribution and testing. CIMMYT houses the largest collections of wheat and

maize germplasm in the developing world, and in the past three years has substantially strengthened its germplasm conservation program. It is also the center for distribution of much of the world’s experimental wheat and maize materials. Actually, more than two million packets of seed are sent to plant scientists in some 120 countries: on-site testing throughout the world is an important feature of the CIMMYT approach. Data collected from more than 2500 nurseries and trials using CIMMYT seed are returned here for analysis. Nursery results are published and distributed to this network of cooperating scientists.

Working together, we can resolve the problems of hunger and starvation on this planet by empowering people to be more productive.

Today, more than 50% of CIMMYT’s senior scientific staff are stationed in regional programs that geographically cover more than 90 developing countries. Some of these programs are conducted in collaboration with sister international institutes. A regional wheat program is headquartered in the International Center for Agricultural Research in the Dry Areas (ICARDA) as part of a cooperative effort to serve small-grain breeding programs in North



Africa and the Middle East. The African maize research program is conducted in collaboration with IITA, and the Andean regional maize program has collaborative ties with CIAT.

These are indeed impressive accomplishments, and I believe that we can say without hesitation that we all owe a debt to the work of the Mexican and American scientists who started working here more than 40 years ago. We also owe a debt to the Rockefeller Foundation, who supported their research financially, and to the people of Mexico and their government for their collaboration and good will. Theirs was an achievement marked by unprecedented scientific progress and by practical and immediate application in the field. Were it not for their efforts, I think we could safely say that the world would be a very different place.

Today we see CIMMYT facing continuing challenges. Although wheat yields have improved dramatically in some countries, CIMMYT needs to play a role in maintenance research to protect the gains already made. It also needs to move upstream in research to be

able to deal with new problems—some might call them 21st-century problems—relating to wheat and maize. The demand for maize is increasing, and CIMMYT researchers face important challenges in continuing to improve maize production in tropical countries. Along with the other international centers, CIMMYT also confronts the challenge of finding new ways to work effectively in Africa. So as we might expect, problems still exist, but many are new ones that only an international center and its partners can solve.

CIMMYT's experiences point out the fact that by working together we can resolve the problems of hunger and starvation on this planet, and that we can do so by empowering people to be more productive. This is the story that I perceive as being central to this important anniversary. I am looking forward to the events of the next two days and to meeting with the many distinguished visitors who are attending this celebration. When we go home I hope that we will all leave with the confidence that the job that lies ahead can be accomplished effectively and with dignity for all people.

Tribute to Virgilio Barco

D.L. Winkelmann

Director General, International Maize and Wheat Improvement Center, Mexico

It gives me great pleasure to have the opportunity to pay tribute to a long-time friend and colleague, and now the President of Colombia, Dr. Virgilio Barco.

His recent election confirms once again President Barco's exceptional qualities of leadership and his desire to serve his fellow man. For the Consultative Group on International Agricultural Research (CGIAR) system, and for CIMMYT and the International Rice Research Institute (IRRI) in particular, President Barco's election has special significance. He was a founding member of CIMMYT's Board of Trustees in 1966, and served as Chairman from 1971 through 1985. As a CIMMYT Trustee, President Barco contributed heavily to discussions leading to the creation of the CGIAR system in 1971. He also served on the IRRI Board of Trustees from 1971 to 1973.

President Barco brought to his work with CIMMYT, IRRI, and the CGIAR system a unique range and depth of experience in agricultural development. He has a broad familiarity with international agricultural research and development organizations, as well as an intimate understanding of the complex issues confronting national agricultural programs and policymakers.

His ability to view the role of such institutions as CIMMYT and IRRI in an international as well as national context enabled him to provide valuable counsel to the direction of policy, research priorities, and involvement in national program development. He worked to ensure that decisions affecting all aspects of the Center's operations were carefully evaluated in light of both the institution's mandate and the needs of its clients.

The knowledge and experience that President Barco so freely shared with his colleagues within the CGIAR system were the product of numerous and varied public service activities. As Colombia's Minister of Agriculture in 1963-64, he facilitated the creation of the Colombian Agricultural and Livestock Institute (ICA), with which CIMMYT and other international agricultural research centers work today; at the same time, he served as Chairman of the Colombian Agrarian Reform Institute (INCORA). He subsequently held positions as Executive Director of the World Bank, the International Finance Corporation (IFC), and the International Development Association (IDA) for Brazil, Colombia, the Dominican Republic, Ecuador, and the Philippines. President Barco also served as a member of the Board of Trustees for the International Agricultural Development Service (IADS).



President Barco's career of public service to Colombia is truly outstanding. He has repeatedly held office, once in the House of Representatives, twice as Senator, and also as Mayor of Bogotá. Aside from his work as Minister of Agriculture, he has served in the Ministries of Public Works, Finance, and Communications. Twice he served as Ambassador from Colombia: once to the Court of St. James and once to the United States. As personal representative of then President of Colombia Carlos Lleras, he participated in negotiations that led to the founding of the Andean Group.

President Barco brought to his work with CIMMYT, IRRI, and the CGIAR system a unique range and depth of experience in agricultural development.

During the 19 years he served on the Center's Board of Trustees, President Barco was intimately involved in guiding the evolution of CIMMYT. Permit me to touch upon the major milestones in that evolutionary process.

The Sixties: Campaigns Against Hunger

It would indeed be difficult to choose a more momentous year than 1966 for the founding of an international agricultural institution. Per

capita food production in India had dropped to its lowest level since World War II, and Pakistan was facing similarly dire circumstances. Indian and Pakistani scientists had been evaluating the performance of Mexican semidwarf wheats for several years and, together with Norman Borlaug, CIMMYT colleagues, and innovative farmers of the Subcontinent, were able to rapidly increase the production of wheat.

During the 1960s, several key changes in CIMMYT's scope and methods of operation came about. Large-scale durum wheat, triticale, and barley breeding initiatives were formally added to the Wheat Program's mandate to improve spring bread wheats. International testing of experimental germplasm from these programs was expanded considerably, with new types of nurseries going to many more countries. The Maize Program made a significant contribution to broadening the germplasm base available to breeders around the world by identifying, developing, and distributing a number of more productive maize populations. And within the Maize Program, a protein quality laboratory was established to assist in the Program's investigation of opaque-2 maize.

In the belief that the lack of adequately trained researchers was a critical limiting factor to agricultural development in most developing countries, a formal in-service training program was established for promising scientists from national programs, and the number of trainees invited to Mexico was expanded. Training was offered in breeding, agronomy, plant pathology, experiment station management, and cereal chemistry. In addition, postdoctoral fellowship opportunities in the Maize and Wheat Programs were increased.

To provide more immediate assistance to national research programs, a number of CIMMYT staff were assigned to important maize- and wheat-producing countries; most were part of bilateral programs. Both the effectiveness and inherent limitations of this approach provided the impetus for restructuring CIMMYT's operations in the 1970s.

The Seventies: Rising Competence of National Programs

National agricultural research programs improved considerably during the 1970s, and the number of such programs also grew. CIMMYT found itself at the heart of this burgeoning network and quickly realized that neither periodic visits by headquarters staff nor the posting of staff to individual countries could

satisfy the growing demand for consultation on research planning and operations. While certain bilateral relationships were maintained, the Center turned to regional programs as a more efficient way of facilitating the exchange of germplasm and information within the growing global network of maize and wheat scientists. By the end of the decade, CIMMYT had in operation four regional maize programs, four regional wheat programs and, as part of a new initiative by the Center, four regional economics programs.

Important changes took place in CIMMYT's international testing activities as well. Maize international testing took a more integral role in the population improvement process, and the reorganized system proved to be more efficient in developing materials for the diverse circumstances in which maize is produced. The system also gave national program researchers automatic access to a broad spectrum of germplasm in various stages of development. On the wheat side, international testing continued to grow and, by 1979, some 38 different types of nurseries were being distributed to cooperators in 115 countries.

In 1970, CIMMYT completed construction of the dormitories and classrooms that comprised part of its new headquarters facilities. This



event enabled the Center to accommodate many more in-service trainees and, with the addition of full-time training officers, offer a greater range of training opportunities.

The early 1970s also marked the beginning of CIMMYT's third major program activity. The Economics Program began its research endeavors by focusing on the reasons why maize and wheat farmers did or did not adopt new technologies; in the course of this research, the Program developed procedures for identifying agroclimatic and socioeconomic circumstances that affect adoption behavior. Subsequent work focused on procedures to enhance the joint efforts of biological scientists and economists to better understand the issues affecting decision making at the farm level. As a result of this work, guidelines were framed that orient the process of technology generation to the needs of farmers, guidelines that have proven effective in enhancing the acceptability of new technologies.

A number of collaborative research projects between CIMMYT, national research programs, and other centers of excellence in developed and developing countries were initiated in the 1970s. Examples include the investigation of three important diseases of maize: downy mildew, with the national programs of Thailand

and the Philippines; maize streak virus, with Tanzania, Zaire, and the International Institute of Tropical Agriculture; and corn stunt, with our colleagues in Nicaragua and El Salvador. In wheat, collaborative research with Oregon State University and the Turkish national program enabled the exploitation of spring x winter crosses, which ultimately lead to the development of the spring wheat, Veery. Another example would be our work on barley yellow dwarf, a ubiquitous disease of wheat and other small grains. Funded by Italy, this multifaceted project involves collaboration among CIMMYT, numerous national programs in developing countries, and several universities in developed nations. Many other examples could be cited, but the important point is that these collaborative projects provide both basic and applied research results useful to all involved.

The Eighties: Extending the Gains

The 1980s brought new challenges to CIMMYT and other international agricultural research centers (IARCs). The most dramatic change for CIMMYT has been our increasing shift toward improving the stability of yield, particularly in more marginal areas. The millions of resource-poor farmers who work these lands have yet to benefit fully from modern farming technologies, and it behooves CIMMYT and the other centers to give greater attention to their needs.

In the late 1970s, CIMMYT began augmenting its conventional plant breeding activities with research on wide crosses, seeking to incorporate desirable genetic traits into maize and wheat from related genera. The use of such biotechnology techniques as tissue culture, callus techniques, and electrophoresis offers considerable promise for progress in these efforts. The 1980s have been heralded as the beginning of the age of biotechnology, and so they are; CIMMYT seeks to stay abreast of developments in this field and, as in the past, will continue to evaluate new techniques for their practicality as they become available.

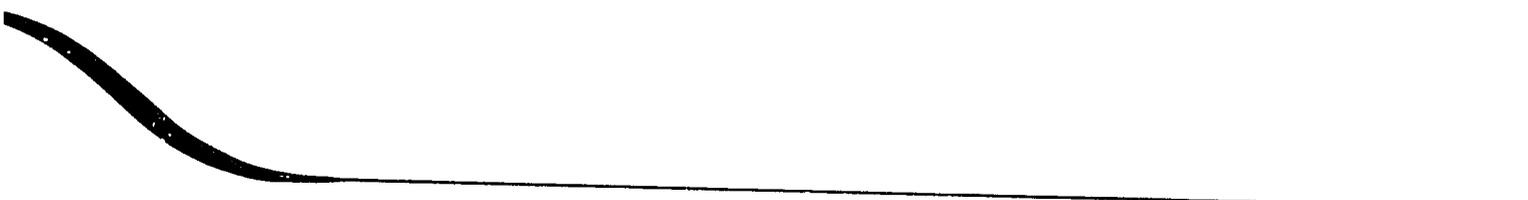
The early 1980s also saw a strengthening of the Center's maize and wheat germplasm bank facilities. Funding from the CGIAR and the Government of Japan has enabled CIMMYT to expand its role in the conservation of maize and wheat genetic resources. Small quantities of seed from these collections are made available to scientists from any country upon request.

With regard to training, CIMMYT continued its in-service offerings at headquarters while expanding its training activities abroad. This change was made possible by the involvement of regional staff in training, as well as by an increase in the number of training officers at

base. Many of the training courses held abroad focus on on-farm research, and several innovative and efficient approaches are used in these training efforts.

Through all of the changes, growth, and new directions, CIMMYT relied on the consistent stewardship of Virgilio Barco.

Finally, the Economics Program continued to develop and teach procedures for on-farm research, while expanding its activities in other directions as well. In 1981, a new series of publications was initiated that focuses on the analysis of data relevant to the world maize and wheat economies. Economics staff also began developing procedures for use by decision makers concerned with the allocation of research resources among crops and regions. The purpose here is to estimate more accurately the real costs of resources used in producing competing commodities, and to do so requires blending economic information with biological data. Work is also underway to explore avenues for using farm-level data for assessing certain aspects of policy, such as the adequacy of input delivery, credit arrangements, information systems, and markets.



Conclusion

And through all the changes, the growth, the new directions, CIMMYT was able to rely on the consistent stewardship of Virgilio Barco. During his 19 years on the Board, the Center evolved into quite a different entity, responding to new challenges and opportunities as they arose, but always mindful of our origins and the needs of our national program clients. Upon his departure, we find a healthy, dynamic, and progressive institution, well-grounded in tradition but oriented toward the future.

His tenure as Colombia's President will no doubt reflect the leadership and dedication so obvious in his association with CIMMYT and the CGIAR system. As he embarks on this, his latest venture into public service, he takes with him the best wishes and heart-felt thanks of all who have had the pleasure and privilege of working with him.

Investing in the Future of Agricultural Research

T. Naito

Ambassador of Japan to Mexico

Let me begin by saying that I am honored to be here today, both to congratulate CIMMYT on its 20th anniversary and to participate in the dedication of this fine new facility. My government sees in this building a very tangible result of our efforts to contribute in meaningful ways to international cooperation in agricultural research and, more specifically, to the process of human resource development for maize and wheat researchers in the Third World.

The functions for which this facility was designed accurately reflect the current needs of agricultural research programs in many developing countries, as well as the assistance priorities of the government of Japan. We feel, first and foremost, that investments in human capital, i.e., in trained people, comprise one of the best uses of scarce resources. We also believe that the process of strengthening the research capabilities of developing-country scientists is inseparable from, indeed, depends upon, the free and open exchange of ideas and information, as well as experimental germplasm. It is these beliefs that are spurring the government and people of Japan to participate more fully than ever before in the battle against the Malthusian challenge.

We are not, however, newcomers to the global network of donors and scientific institutions involved in agricultural research. Japan has

been a major donor to the Consultative Group on International Agricultural Research (CGIAR) since its inception in 1971, and a steady supporter of the research of CIMMYT and the International Rice Research Institute (IRRI) in particular. Our contributions have taken a number of forms. This building, the construction of which was financed by the government of Japan in conjunction with the Japan Shipbuilding Industry Foundation, is one of the more visible forms of our support to CIMMYT and, through the Center's work, to national agricultural research programs in the developing world. While we are here today to dedicate this facility in the name of our good friend Dr. Norman E. Borlaug, permit me to mention a few other areas in which Japan has participated over the years.

As I mentioned a moment ago, Japan has been a consistent and long-time supporter of the CGIAR. My government identifies strongly with the system's stated objectives and we are quite proud of the financial contributions we have made toward supporting the critical work of the international agricultural research centers (IARCs) that, along with the various donors, comprise this unique system. Beyond the provision of core funds, however, the government of Japan has contributed to the research of specific Centers through funding of various special projects.



In the case of CIMMYT, for example, special project funds were provided to build the Center's wheat germplasm bank. That facility, which became operational in late 1981, is of great importance to the future activities of CIMMYT's Wheat Program as well as to the Program's clients throughout the Third World. The bank, which now contains some 23,000 entries, is designed for the short- and intermediate-term storage of working collections of bread wheat, durum wheat, triticale, barley, and interspecific crosses. These collections are used by Wheat Program breeders to help maintain genetic diversity in CIMMYT's wheat and triticale germplasm, and are available to national program scientists upon request to interject diversity into their breeding efforts.

Before turning away from the subject of germplasm, and as a matter of historical interest, I would also like to mention that the semidwarf wheats that have done so much to transform wheat production around the world carry with them a bit of Japanese ancestry, an influence that has little to do with financial contributions to international research, but which demonstrates that the international exchange of germplasm in such research yields valuable and enduring results.

The wheat variety Norin 10 was released in Japan in 1935, and by degrees Norin 10 germplasm made its way to Mexico, where, in

1953, Norman Borlaug began to work with it. We are all familiar with the results of this work. The incorporation of the Norin 10 dwarfing gene into Mexican spring wheats eventually resulted in varieties that, by virtue of their tremendous yield potential, radically altered the world wheat crop.

My government also recognizes the exciting potential that lies in biotechnology and strives to support both basic and applied research in this burgeoning field. To that end, the government of Japan sponsored in 1985 an international symposium on the state-of-the-art in biotechnology (held in conjunction with the CGIAR Midterm Meeting in Tokyo); the symposium focused particularly on the current and anticipated applications of new techniques and procedures. Our interest in sponsoring such symposia stems from an abiding belief in the need to exchange ideas and information in an efficient manner, particularly in relation to such a fast-breaking field as biotechnology.

In the context of this direct and indirect support of international agricultural research and, in particular, to the work of CIMMYT, Japan may be said to have made yet another very significant contribution. During CIMMYT's 20-year history, Japanese scientists have made important contributions to the Center's research; others have helped shape CIMMYT's

management policies and research agenda. Kan-Ichi Murakami and Tomio Yoshida, distinguished scientists in their own right, have served as members of CIMMYT's Board of Trustees; Hikoyuki Yamaguchi is the current Japanese representative on the Board. He replaced Dr. Yoshida, who joined the Technical Advisory Committee to the CGIAR and is now helping to map overall strategy for the CGIAR system.

Several scientists who call Japan home have served or are now serving the Maize and Wheat Programs. But one example: Dr. Suketoshi Taba, a Maize Program staff member, made considerable progress with the development of highland maize in the Andean Region, and has since returned to headquarters in Mexico to head the Maize Germplasm Bank. The bank facilities were recently improved so that it could take on a critical role in the preservation of maize seed, especially of the wild relatives of maize, some of which are increasingly subject to the threat of extinction. Other Japanese nationals no less important than Dr. Taba have played and continue to play a significant role in the research of CIMMYT and other international centers.

Examples such as these clearly demonstrate my government's commitment to agricultural development in the Third World; we are investing in more than equipment or physical

facilities. We are investing in human resources, in the capacity of agricultural scientists and others who, through their efforts, are improving the lives of millions of people around the world. We are investing in the preservation of genetic resources, in the belief that future research options may be circumscribed by the erosion of genetic diversity in our cultivated crops and

The process of strengthening research capabilities of developing country scientists is inseparable from the free and open exchange of ideas as well as germplasm.

their wild relatives. Finally, we are investing in the future itself, in the sense that to anticipate critical changes is better than being surprised by the turn of events. It is in this spirit that we regard these fine new facilities—not as an acknowledgement of past successes only, but also as a statement of our belief in the promise that agricultural science holds for the future well-being of mankind.

Let me close by simply saying "Best wishes to CIMMYT staff as they move forward with their research during the next 20 years." We have every confidence in their ability and the ability of the CGIAR system to meet the challenges of the coming decades.

Toward a World without Hunger

R. Sasakawa

Chairman, Japan Shipbuilding Industry Foundation, Japan

On the occasion of the 20th anniversary of CIMMYT and the inauguration of this important new training center, Chairman Ryoichi Sasakawa and his Japan Shipbuilding Industry Foundation send their heartiest congratulations.

The Japan Shipbuilding Industry Foundation was established to promote international understanding between Japan and the rest of the world and to improve the public health and social welfare of the world's citizens. The Foundation is apolitical, not for profit, and solely committed to the alleviation of all suffering throughout the world, particularly that caused by malnutrition and famine.

Thus, supporting CIMMYT and its important work fulfills in every way the Foundation's objectives. We are proud to have been able to make a small contribution to CIMMYT's development and, through the new training center, to its continued future excellence.

Seeds sown by CIMMYT have been scattered far and wide during the past 20 years, and CIMMYT's trained experts now work in almost every country in the developing world. It is a testament to the reputation of this organization and the valuable service it performs that we are able to inaugurate this new and expanded training center, appropriately named for Norman Borlaug.

Anyone who thinks of Norman Borlaug immediately recalls the Green Revolution that was so much his creation—not today's politicized version of that achievement, but the original Borlaug dream of plentiful, better quality food for all and the eradication of famine.

Our Foundation is now in the forefront of the fight to remove the specter of famine in Africa, and we are working on an important pilot study in four African countries. The goal is to educate local farmers in the use of crop planting methods, in the most appropriate farming technology, and especially in the spreading of these techniques from farmer to farmer. You at CIMMYT are well aware of this program since it is your experts, among others, who—with our resources—are helping in this vital work.

To paraphrase the late John F. Kennedy, all of this work will not be completed in 100 days, nor in 1000 days, but it must be completed in our lifetimes and we have made a beginning. He would have approved of this training center and the training of young women and men in the latest scientific methods for improving food production to end the suffering of their fellow human beings in the huts and villages in so many parts of the world.

We wish CIMMYT every success in its current and future endeavors.

The Human Element: CIMMYT Training

H.M. Hepworth

Training Coordinator, International Maize and Wheat Improvement Center, Mexico

In the next five minutes or so I would like to tell you what we at CIMMYT are trying to do in our training programs. Let me begin by briefly stating the three major components of our training philosophy.

First, we believe strongly in *learning by doing*. We believe that our colleagues should be able to grow a good crop of wheat or maize. Thus the fields are our classrooms and the trainees produce crops from seeding to harvest. They observe, discuss, record, and analyze the crop, both agronomically and economically.

The second component of our philosophy is a focus on *near-term solutions*: in many parts of the world where CIMMYT cooperates with national programs, the need for more food is a fact of life, every day. So while CIMMYT trainees are encouraged to plan carefully for the future, they are taught to respond to immediate food production problems and needs.

Third, CIMMYT training is *commodity focused*. CIMMYT's areas of expertise are maize and wheat. We concentrate on maize and wheat production, but are also sensitive to the relationships between crops and the complexity of problems faced by farmers.

What benefits has the training program brought to our colleagues throughout the world?

Primarily we assist them to become more competent agricultural scientists. However, according to the authors of the Technical Advisory Committee (TAC) review of training conducted in 1984, the effects of our association extend far beyond scientific training. The most important effects of training were far more personal and intimate than the accumulation of knowledge. Trainees benefited from "the unexpected enjoyment of arduous physical work in the field, in heat, cold, rain or snow, with animals, crops and soils, alongside senior and highly qualified individuals, which led them to take pride in practical skills and achievements and the realization in practice of much that had been only theoretical in their previous training. All educators are accustomed to seeing people changed by education: what was remarkable...was that these people knew they had been changed, had enjoyed the process, and were proud of the result."

Former trainees and visiting scientists also value their continuing contact with the centers after training. "The former participant need no longer be isolated: he is now a member of a special and distinct group, part of the worldwide professional community of agricultural science, a fellow of a global



invisible college. He is supported morally even more than materially. No other training known to us has anywhere near so powerful an effect of this kind."

"I cherish the expansive outlook that fosters a community spirit in scientists associated with this Center, and hope this faith in cooperation continues to grow." D.S. Sidhu

We in the training program like to believe that statement. The alumni of our training program join an extensive network of scientists that now exceeds 3000 persons working in national programs around the world. I would like to introduce you to three colleagues who came to CIMMYT for training, and who will briefly relate their ideas of what they gained from the experience.

D.S. Sidhu

Head of Economics Section, Punjab Agricultural University at Ludhiana, India
It is a matter of great pleasure for me to be invited to CIMMYT's 20th anniversary celebrations and add to this galaxy of distinguished participants. I am grateful to CIMMYT for providing me this opportunity.

The story of Mexican wheat in India, especially in the Punjab and Ludhiana District, is a story of success that should be written in letters of gold. That wheat not only helped forestall hunger and brought India to the threshold of self-sufficiency, but gave us surplus food grain. CIMMYT has been the single crucial factor in the background of this remarkable achievement, providing better seed, knowledge, and sound training to visiting scientists and trainees.

I have only been associated with CIMMYT since 1976. As a visiting scientist, I worked on production and marketing policies affecting wheat in India. This collaboration was very useful for me in enhancing my ability to analyze various emerging problems and also to provide guidelines for the national government.

CIMMYT provided valuable assistance by offering different training facilities to Third World countries in general and India in particular. I cherish the broad, expansive outlook that fosters a community spirit and inculcates a multidisciplinary approach in scientists associated with this great Center, and I hope this faith in mutual cooperation will continue to grow in times to come.

J. Ever Vargas

Colombian Agriculture and Livestock Institute, Colombia

It is a great pleasure to take advantage of the opportunity given to me to address this prestigious group. CIMMYT is celebrating 20 years of hard work in the service of mankind, especially in the least-developed countries and for the most needy populations of the world.

For the Colombian Agricultural and Livestock Institute, the organization where I work, for Colombia, and for Latin America itself, the training task taken on by CIMMYT has made a very valuable contribution. During the past 20 years, more than 500 Latin American scientists—some 37 from Colombia, including the people who form ICA—have come through the classrooms, laboratories, and research fields of CIMMYT. I am sure that the knowledge we received has made our personal and professional development better.

As the freedom fighter Simón Bolívar said, institutions are nothing without the people who constitute them. In this connection, I would like to mention the human qualities of the research team here; their friendliness, sincerity, and other virtues complement their scientific expertise. It is important to point

out that the positive influence of training might have died slowly had CIMMYT not maintained contact with us—through other trainees, publications, personal contacts, and surveys done by CIMMYT regional staff. Through these different forms of communication CIMMYT has continued to disseminate practical instruction and research findings, and the sense of our cooperation for the benefit of all has been strengthened.

“It is important to point out that the positive influence of training might have died slowly had CIMMYT not maintained contact with us.”

J. Ever Vargas

M.A. Bajwa

Director General, Ayub Agricultural Research Institute, Faisalabad, Pakistan

Since CIMMYT is celebrating its 20th anniversary with the dedication of this building to Dr. Norman Borlaug, I consider it appropriate to relate my experience as a member of his first group of trainees from several different countries: Pakistan, Iran, Turkey, Syria, and Libya. When we arrived, wearing coats and ties, Dr. Borlaug took us directly to the field. It was in the morning



there. You can imagine what happened. When we were through we thought, well, this is just the first day. We changed our pants and the next day we wore the same thing. The exercise repeated itself. Then all of us thought, "This won't work," and we went to the market and purchased cotton pants and high boots and that's what we used from then on.

"Dr. Borlaug often mentioned that we should not, like some scientists, spend our time 'chasing butterflies' and accumulating publications."
M A. Bjawa

In his lectures to us, Dr. Borlaug often mentioned the precarious position of developing nations and the need for us to help our countries arrive at self-sufficiency in food production. We should not, like some scientists, spend our time "chasing butterflies" and accumulating publications. He stressed that though it might be difficult for us to obtain genetic material from neighboring research stations, it was one of the duties of CIMMYT to keep genetic

material accessible to scientists from any part of the world. We could obtain it, take it to our countries, and convert it into improved materials.

In the developing countries I believe we cannot do without the assistance of international organizations—especially through conferences and workshops—to exchange information that is very important in raising food production. For example, we need to be told about new biotechnologies and how to harness them for practical use, and this is where CIMMYT plays an important role. The point I want to make is that CIMMYT brings three things to its work with Third World scientists: dedication to work, the spirit of devotion, and an awareness of the world food situation. The Center thus reinforces the notion that, as scientists, we share the responsibility to feed the world.

Expanding Training Opportunities and Resources

W.C. James

*Deputy Director General for Research,
International Maize and Wheat Improvement Center, Mexico*

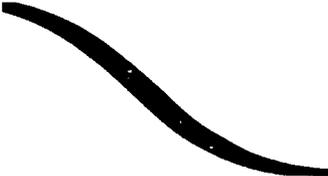
During the last 20 years agricultural researchers throughout the developing world have considered CIMMYT as their international research center for maize and wheat. This international network or fraternity of maize and wheat researchers, coordinated by CIMMYT, has served to bring together the work of thousands of scientists and hundreds of research institutions worldwide. Today, CIMMYT works with agricultural researchers in more than 125 countries.

While the size of the network has changed dramatically over the past two decades, so too has the fundamental nature of CIMMYT's relationship with the national research institutions and the individuals who make up this research community. At the beginning of the 1970s, many Third World agricultural institutions were just initiating their maize and wheat research programs; today, a growing number are staffed with competent and experienced maize and wheat researchers. These more advanced programs now seek an expanding range of opportunities to improve the research capabilities of their senior scientists, many of whom were in-service trainees at CIMMYT a decade or more ago. At the same time, the less advanced national programs still require practical in-service training for their most promising young scientists in the basics of crop research.

While CIMMYT believes that it is essential to maintain its in-service training courses designed for junior research workers, it must also seek new innovations in its training program activities in the years ahead to serve the changing needs of its national program clientele.

With the inauguration today of the Norman E. Borlaug Training, Conference, and Information Center, CIMMYT is in an excellent position to expand its array of training opportunities for Third World researchers. We see needs in three major areas.

- First, more short-term visiting scientist fellowships for one to two months that would allow more national program staff to exchange views with CIMMYT staff and to better familiarize themselves with the products and procedures that this Center has to offer;
- Second, a new research fellowship program for senior-level researchers who have made significant contributions to the advancement of agricultural research in their home countries. These new fellowships would allow maize and wheat specialists to conduct research on a topic of importance to their national programs during a six-month residency at CIMMYT; and

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- Last, but certainly not least, fellowships to provide support for key national program collaborators to pursue graduate training in conjunction with CIMMYT.

Given the current funding constraints, CIMMYT would be unable to support this new fellowship program from core funds and provide the necessary material resources of additional facilities and equipment, including computers and simultaneous translation capability.

More advanced national agricultural research programs now seek an expanding range of opportunities to improve the research capabilities of their senior scientists, many of whom were in-service trainees at CIMMYT a decade or more ago.

Hence, CIMMYT sought to secure additional funding for these purposes from its current donors and also from private sector corporations. On behalf of the Board of Trustees, management, and staff it is my pleasure today to acknowledge the grants and contributions from our current donors.

The Government of Japan has contributed a significant grant in 1986 that will allow CIMMYT to construct dormitories and cafeteria facilities for the additional visiting scientists who will be accommodated in this new building.

The Government of Japan, represented here today by its Ambassador to Mexico, His Excellency Takeshi Naito, has also supported approximately 20 research fellowships that will be awarded by CIMMYT to maize and wheat specialists from the Third World to pursue research or graduate studies in conjunction with this Center.

The Federal Republic of Germany, represented here by its Ambassador to Mexico, His Excellency Heinz Dittmann, has generously donated audiovisual equipment and a MICROVAX computer that will provide the required additional central computer capacity for trainees, visiting scientists, and training staff in this new building. Three Master of Science fellowships have also been supported and will be awarded by CIMMYT to maize specialists from selected countries in Africa.

The Government of Canada, through the Canadian International Development Agency (CIDA), has donated the simultaneous

translation equipment that will be used by the trainees and visiting scientists that we host from over 100 countries in Africa, Asia, and Latin America. The Government of Canada and CIDA are represented here by the President of CIDA, Margaret Catley-Carlson.

The Government of Norway, through the Royal Norwegian Ministry of Development Cooperation, has donated a series of microcomputers for use by trainees and visiting scientists. The Government of Norway is represented by its Ambassador to Mexico, His Excellency John Grieg.

In addition to these grants from current CIMMYT donors, CIMMYT is pleased to acknowledge grants and contributions from corporations in the private sector which are not donors to the Consultative Group on International Agricultural Research (CGIAR).

International Business Machines (IBM) has provided a network of microcomputers and, perhaps more important, support to facilitate cooperation with their Scientific Center in Mexico to develop software and computer-aided training materials. Ing. Alfredo Capote represents IBM here today.

Digital Equipment de Mexico has provided a grant to support a scholarship in computer science and is represented here by Mr. Dave Kelly.

Pioneer Hi-Bred International has provided a grant to CIMMYT to support 12 research scholarships for the period 1986 to 1988. Candidates will be selected by CIMMYT from countries in Africa, Asia, and Latin America. Pioneer is represented here today by Dr. William Kuhn.

CIMMYT is in an excellent position to expand its array of training opportunities for Third World researchers.

Finally, seven corporations have each pledged support for three short-term visiting scientist scholarships during the period from 1986 to 1988. These seven corporations are Bayer, Ciba-Geigy, Du-Pont, FMC, Hoechst, Rohm and Haas, and Stauffer.



CIMMYT is pleased to acknowledge these generous grants and contributions from the various donors, which will allow the Center to provide facilities, equipment, and fellowships for more than 60 maize and wheat specialists from the Third World over the next three years. We hope that this new fellowship program will

help strengthen agricultural research institutions in the developing world through investments in human capital, which will in turn help assure expanding food supplies in the Third World for the remainder of this century and beyond.

Mutual Goals, Mutual Growth: Mexico and CIMMYT

E. Pesqueira

Secretary of Agriculture, Mexico

In my capacity as the International Maize and Wheat Improvement Center Assembly President, it is a great pleasure for me to address you on this occasion of CIMMYT's 20th anniversary and the inauguration of the training center. Construction of the building, named in honor of Dr. Norman Borlaug, was made possible by the generosity and support of the Japan Shipbuilding Industry Foundation and the Government of Japan.

It is often said that 20 years are nothing. But for Mexico and for other developing countries, CIMMYT's 20 years of existence which we are celebrating today signify important advances in the struggle to satisfy basic consumer necessities and to strengthen our people's ability to meet their own food needs. We have been both witnesses to and beneficiaries of the outstanding work conducted by this excellent center during these years.

I would like to take this opportunity to commend the efforts made on behalf of this Board by Virgilio Barco, now President of Colombia, our sister republic. These 20 years of hard and systematic work have made possible the attainment of a Nobel Peace Prize; the training of more than 4000 scientists from different countries; and the design of production methods that have made more modern agriculture possible in our countries.

It is estimated that high-yielding varieties of wheat containing CIMMYT germplasm are cultivated on 55 million hectares of land, while a little more than six million hectares are planted with materials developed by national programs from germplasm made available through the international maize testing program. This is a record CIMMYT can be proud of.

We are delighted, therefore, that our nation is the headquarters for this institution. Its success represents the crystallization of an experiment undertaken by the President of Mexico at the time, Adolfo López Mateos. Today we honor him by proposing the creation of the International Maize and Wheat Improvement Center as a center that will be dedicated to the consolidation, development, and diffusion of the achievements of the Cooperative Agricultural Research Program. The Mexican government and the Rockefeller Foundation started this program in 1943.

Since then, we have shared many efforts and benefits with the world. Naturally, we are the primary beneficiaries of the Center's research and training work. In coordination with the research institutes of the Secretariat of Agriculture and Water Resources (SARH), approximately 55 varieties of wheat have been distributed in Mexico, and cover close to 90% of the country's wheat-growing area.



Thanks to this, our nation is already self-sufficient in this basic grain and has become an important exporter since 1965. In recent years, wheat exports have reached approximately one million tons. Maize production has benefited also, with an estimated one million hectares planted with improved varieties. This has been achieved largely through cooperative effort, with support for the professional training of Mexican technicians playing an important part.

We have been both witnesses to and beneficiaries of the outstanding work conducted by this excellent center during these years.

Mexico has participated fully in this Center's work, and even with our limitations we have supported the establishment of adequate facilities for the development of CIMMYT's activities.

Our agricultural research centers, experimental fields, and plant health services contribute to continuing investigations into plant cultivation and to the distribution of experimental seed. We are an important contributor of maize and wheat germplasm in the world and, with the

exception of Brazil, we are the only Latin American country that gives financial support to the international research centers.

The production of wheat seed resulting from our shared research has helped some countries, such as India, to solve the problem of self-sufficiency in the cultivation of this grain.

It is evident that although important goals have been reached with wheat there is still a long way to go with maize. The fruits of the labor of the past several years are just beginning to ripen, and it is urgent that we redouble our efforts. The fight against hunger demands this, especially in countries such as our own, where maize is the population's basic source of social peace in the countryside.

Research aimed at meeting national development objectives must be intensified. Thus, the protein enrichment of maize and the improvement of maize germplasm resistant to adverse weather conditions should receive the highest priority in the near future. Our principal challenges and best hope for achieving food self-sufficiency lie in the development of maize cultivation.

The research conducted by the international centers ought to be closely linked to the work of the national institutes, in order to make optimum use of scarce available resources.

It is even more important that the necessary connections be established for a close working relationship between the researcher, with his work centers and investigations, and the rural producer, who must be considered as an active participant in his own social transformation.

The advances achieved in agricultural research by CIMMYT, in coordination with national programs, clearly show the importance of cooperation as a means of surmounting the limitations that our countries face. In the future, an increasing amount of investigation will be conducted through such concerted effort and compromise.

Seen in this context, the fundamental principles of Mexican foreign policy take on added importance. These include the right of people to self-determination, nonintervention, peaceful solutions to conflicts and, as in CIMMYT, the promotion of cooperation for development. Only upon this base can a more just and mutually respectful international society be constructed, making dialogue based on reason and conciliation, rather than the use of force, the norm of conduct in international relations.

President de la Madrid is about to leave on a voyage for peace, to present and advocate precisely these principles before the General Assembly of the United Nations in New York.

Mr. President, distinguished audience, the Secretariat of Agriculture and Water Resources is interested in the change that would allow CIMMYT to enjoy the status of an international organization. This is a longstanding goal of the institution's directors.

Research conducted by international centers ought to be closely linked to the work of national institutes, to make optimum use of scarce resources.

The benefits to the country—since Mexico would continue to be the organization's headquarters—would increase significantly with this important decision, and the international scientific community and research development would be favorably affected. We will inform the Foreign Relations Secretariat, which is responsible for the final decision, in this matter.

For our part, we wish many more years of success to CIMMYT, for the good of world agriculture.

*CIMMYT's Contributions to World Agriculture**

D.L. Winkelmann

Director General, International Maize and Wheat Improvement Center, Mexico

This is a timely occasion for the Consultative Group on International Agricultural Research (CGIAR) in general, and CIMMYT in particular, to publicly acknowledge and sincerely thank the Government of Mexico, its agencies and institutions, for the generous and strong support we have received over the past 20 years. Mexico, our host country, has offered us the endorsements and stimuli that in turn have facilitated CIMMYT's collaborative research and training efforts throughout the world. CIMMYT continues to strive to be worthy of this generous support.

Mr. President, Secretary Pesqueira has invited me to tell you something about CIMMYT, concentrating on the global impact of our activities. It is an honor to respond to this gracious request and a great privilege to represent the CIMMYT team.

CIMMYT was founded in its present form in 1966, the product of a long and fruitful collaboration between the Government of Mexico and the Rockefeller Foundation. The Center's creation had been proposed three years earlier by Adolfo López Mateos, then President of Mexico, and was motivated by the

threat of famine in Asia. The goal was to improve agricultural production through research, and to support national research with a network of international centers.

We now have 13 international centers, guided and financed through the CGIAR. Each has its own independent and international board of directors. The President of the CGIAR, Mr. Shahid Husain, is here with us today, as are almost all of the members of CIMMYT's Board of Directors, who come from 14 countries including Mexico. Our scientific staff is also international, representing 30 countries.

Through the National Institute of Forestry, Agriculture, and Livestock Research (INIFAP) and the Secretariat of Agriculture and Water Resources (SARH), we work closely with Mexican institutions. The Mexican infrastructure gives us material support and the country's varied climate offers diverse agroecological zones for research. But even more important is our reliance on the dedication, energy, and ingenuity of 800 Mexican national staff to sustain our international work.

And what does CIMMYT bring to world agriculture? Briefly, Mr. President, we produce improved lines of wheat and maize, train scientists in agricultural research on these crops, develop research procedures, and

* An address to the President of Mexico

provide consultation and relevant information on maize and wheat. We offer these products and services to national research programs so that they, in turn, can generate new technologies in a form most appropriate to farmers. We collaborate with thousands of researchers in more than 100 countries. They contribute to and benefit from the international network whose nucleus is CIMMYT.

With this description of the structure within which we work, I'd like to tell you briefly about some of the achievements of this extensive collaborative network.

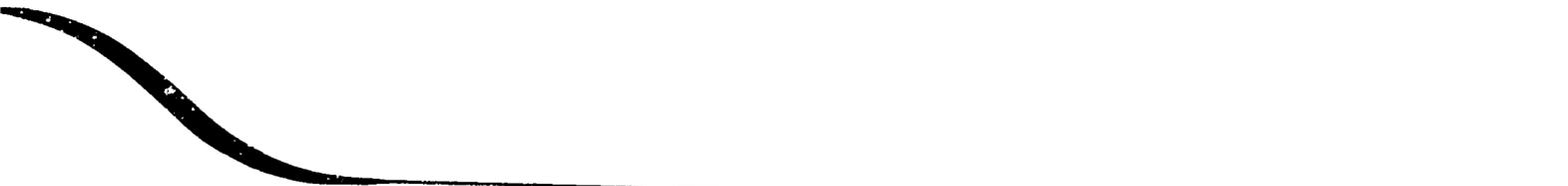
Varieties of wheat and maize derived from CIMMYT germplasm are presently grown on some 55 million hectares in developing countries, and on an even greater area worldwide. In developing countries, improved varieties of wheat occupy 60% of the total land area devoted to this cereal crop. In an independent study it is estimated that, annually, the increase in Gross Agricultural Product attributable to improved varieties alone is 2000 million dollars. Compare that with the investment, this result is staggering.

And every year the area expands as new materials with the capacity to withstand formerly limiting conditions are made available. For example, in Brazil, where varieties with

greater tolerance to heat and acid soils are available, the wheat area is expanding. And not only are wheat and maize production affected by new varieties; other crops are affected as well. The great rise in soybean production in Argentina is related to the new short-cycle wheats that make it possible to double crop. In the Andean Region, early maturing maize germplasm has made it possible to grow peas, green corn, and even potatoes. Well-focused, adequately supported research is the source of these gains.

CIMMYT relies on the dedication, energy, and ingenuity of 800 Mexican national staff to sustain our international work.

One particularly interesting case is that of India. In the mid-1960s, when yields in such basic food crops as rice and wheat were low, there was a serious fear of famine in India. Dwarf Mexican varieties, already grown at that time in northwestern Mexico, seemed promising in experimental plots in India, and it was decided to release them. Supported by 18,000 tons of wheat seed exported by the farmers of northwestern Mexico, the energies of India's researchers, and the perspicacity of thousands of Indian farmers, the varieties were rapidly



disseminated, with the result that yields, area, and production began to mount at prodigious rates. In a decade yields increased 50% and total production 100%.

Some of those with us today—for example, Dr. Borlaug and Dr. Swaminathan, now Director of a sister institute that concentrates on rice research—were at the center of that effort and lived experiences that the Gods bestow on few persons. Today, yields have increased more than 100% and production is four times greater than during the mid-1960s. They continue to rise. As for the famine that seemed imminent in 1965, in 1985 India could respond to the famine in Ethiopia with a donation of more than 100,000 tons of wheat—a noble triumph.

We collaborate with thousands of researchers, who contribute to and benefit from the international network whose nucleus is CIMMYT.

And what was happening in Mexico during those years? We estimate that 20% of the maize area is planted to varieties derived through the work of CIMMYT and our colleagues in INIFAP. Nearly all of Mexico's wheat area is planted with wheat varieties developed through collaborative work between

CIMMYT and INIFAP. The additional grain produced from these improved varieties certainly exceeds 2.5 millions tons per year. The fact that farmers in the northwest contribute to the funding of research through voluntary donations is a measure of their enthusiasm for these varieties.

Over time, the improved varieties have gained Mexican farmers not only higher yields but stability in yields as well. This is especially important in the case of wheat where the organisms causing disease make it necessary to introduce a whole new set of varieties every few years. Nature has decreed that the wheat breeder must engage in a continual battle with his adversary—disease.

CIMMYT has also forged a remarkable record in training researchers from around the world. Let me call your attention, Mr. President, to the group of 80 researchers now participating in our training courses during this cycle. These men and women have come to Mexico from 30 countries. They are the latest among some 4000 who have participated in in-service training programs, and some 1200 visiting scientists who come here for shorter stints.

These people form the major part of maize and wheat research programs in dozens of countries. During their stay here they enjoy

Mexican hospitality and return to their countries as ambassadors of good will. Among them, around the world, the Mexican *abrazo* is a standard form of greeting.

I think, Mr. President, that our relationship has been an extremely fruitful one. CIMMYT has gained much from the social, physical, and human resources of Mexico. At the same time, through CIMMYT, Mexico has benefited from its access to the skills and energies of thousands of agricultural research professionals from around the world, as well as from

CIMMYT. The fruits of this cooperation are found in the fields of Mexico's farmers. No doubt you will agree, Mr. President, that our association has been truly exceptional.

This is but a brief account of a very rich history. I close with the hope of having stimulated your interest in the international aspect of agricultural research. Mr. President, on behalf of the CIMMYT community and our very distinguished guests, allow me to respectfully ask you to formally dedicate the Norman E. Borlaug Building.

Inauguration of the Norman E. Borlaug Building

Miguel de la Madrid
President of Mexico



On the 22nd day of September, 1986, the inauguration of the Norman E. Borlaug Building, dedicated to training agricultural scientists from all over the world.

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