# HISTORY AND DEVELOPMENT OF

# THE NORTH AFRICA REGIONAL WHEAT PROGRAM

by

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## Background

At one time in past history, certain areas of North Africa exported cereal grains to the European market. Early in the 1960's, internal consumption required all food production of the respective countries. Population increases, droughts, increased awareness of nutrition needs and better distribution have all contributed to the short supply of all cereal grains.

Wheat is the major cereal grain grown and utilized in the food diets of North African people. Wheat can be grown in a large part of the rainfed land. Wheat is responsive to both irrigation and dryland farming methods. Modern and primitive, each requires a high quality of know-how. Simple hand equipment can produce cereal crops in a reasonable manner.

U.S. aid Missions have for a number of years emphasized agriculture development to help supply food. Technicians, training, modern farming methods, equipment, seed, agricultural education, and demonstrations have all been used in North African countries in various degrees.

## U.S. Wheat Activities in Tunisia and Morocco

The experience of the Ford and Rockefeller Foundations in a number of developing countries has clearly demonstrated the feasibility of making rapid increases in wheat production. Pioneer efforts in

wheat development were undertaken in Mexico in 1943. At that time, average wheat yields were only 6.5 quintals per hectare. By 1965, this figure had increased to 28.5 quintals per hectare. This remarkable transformation in Mexican wheat production was due primarily to the innovative work of the Rockefeller Foundation -- especially the successful introduction of high yielding, disease resistant, semi-dwarf wheat varieties. Using the same approach and semi-dwarf wheat seed in subsequent programs in Pakistan, India, Turkey and other countries has shown that the large yields obtained in Mexico can be repeated elsewhere in a surprisingly short period of time.

Plans for a major wheat program along similar lines in Tunisia and Morocco were first actively considered in early 1966. Dr. Bärlöug of the Ford-Rockefeller Center in Mexico (Centro Internacional De Mejoramiento De Maiz Y Trigo, CIMMYT) went to Tunisia to investigate the possibilities of establishing a wheat improvement program. As a consequence of his visit in April 1966 and later visits by Drs. Gibler and Stackman of the Rockefeller Foundation, plans for a cooperative wheat program in Tunisia gradually took shape. Following his April 1966 visit to Tunisia, Dr. Bärlöug prepared a report entitled "Tunisian Wheat Production Problems and Suggestions for Increasing Yields and Production." He suggested undertaking wheat research and development in cooperation with existing institutions. At the time, the CIMMYT collection of wheat germoplasm, know-how, and financial resources was considered as a possibility for regional wheat development in North Africa.

In Morocco, a program independent of the activities in Tunisia got under way in June 1966 with the visit of two Tennessee Valley Authority experts, Drs. McCune and McKnight, to study the feasibility of a large-scale wheat fertilization program. With the active support of Ambassador Henry Tasca and the enthusiastic endorsement of King Hassan II, a goal of 200,000 hectares was set for the initial crop year of 1966-67. A second team of four TVA experts came to Morocco in October to draw up plans for a comprehensive long-range program for wheat improvement.

USAID/Morocco made available the services of several agricultural technicians already on-board and supplied sufficient PL 480 generated local currencies for the necessary credit to farmers for the purchase of seed and fertilizer. Despite the late start and numerous logistical problems, "Operation Engrais", as the program was named, reached 180,000 hectares in its first year. In addition, seed of Mexican semi-dwarf varieties was requested from CIMMYT and some 650 varieties and lines were planted in November and December 1966.

Project Development in Tunisia

On November 5, 1966, Rockefeller scientists, Drs. Gibler and Stackman, visited Tunisia, met and discussed the project's possibility with A.I.D., the Government of Tunisia, and United Nations officials INRAT (National Agriculture Research Institute) was found to have the capability to expand wheat research experimental activities. At the specific request of the Minister of Agriculture, Rockefeller offered

shipments of wheat seed varieties for planting in the crop year 1966/67. Both hard and soft wheat varieties were planted. The Tunisians along with USAID technicians were to evaluate the wheat varieties for (1) yield, (2) disease resistance, (3) adaptiveness, (4) fertilizer response, and (5) potential. Attention was directed to solution of wheat production problems such as lodging. Similarly, samples were sent to Morocco for field tests. The Tunisia Mission, under the direction of Stuart T. Baron, and GOT Agriculture Chief, N. V. Lateef, had high hopes at this early date of a regional center for wheat research. Justification for consideration, in addition to the Rockefeller/CIMMYT interest and the urgent need for wheat as food, was amplified by (1) the Government of Tunisia's interest, (2) establishment of a research institute, (3) experience in wheat development, (4) expertise to be made available, (5) cooperative attitude, and (6) acceptance of foreign technical cooperation. In addition, CIMMYT and the Rockefeller Foundation were considering the establishment of a cereals improvement center in the Mediterranean Basin and Middle East which would (1) develop superior varieties in the area, (2) provide training for local agronomists, (3) provide breeding materials and varieties for testing, (4) assist in planning, testing and evaluating cereal breeding activities in that area.

Early in 1966 the Rockefeller regional approach to common cereal supply problems included the Maghrebian countries of Morocco, Tunisia, Algeria and Libya. Each country was visited and the U.S. was clearly

encouraging development of working relations between private U.S. foundations and the governments of the area, particularly countries not then receiving aid from the U.S. who could through the regional program also gain from wheat research since similar land, soil, methods, climate, and food eating habits are shared.

The first test plantings of Mexican semi-dwarf varieties in Tunisia were made in 1965. Following Dr. Borlaug's visit in early 1966, several hundred additional varieties of semi-dwarf wheat seeds were sent from CIMMYT for test planting in Tunisia and Morocco in cooperation with A.I.D. agriculture technicians and the GOM-GOT Ministries of Agriculture. The results of these preliminary tests conducted over the next two years confirmed the adaptability of the semi-dwarf wheats to Morocco and Tunisia.

Rapidly following up on this experience -- and to avoid loss of a crop year while formal plans for a wheat project were being completed -- the USAID in Tunisia spearheaded a cooperative effort to undertake a major demonstration of the new wheats during the 1967/68 growing season. With the enthusiastic cooperation of the Tunisian Government, some 800 hectares were carefully selected for the field demonstration from 32 farms scatterred throughout the principal wheat growing areas of Tunisia.

USAID funded the importation of 45 tons of Mexican seed and provided technical leadership for the program in the person of Dr. Samuel Litzenberger. Other on-board USAID personnel, A.I.D.

contract employees and during the critical planting period, Dr. Gibler from the Rockefeller Foundation were detailed to the activity on an ad hoc basis as required. USAID also provided counterpart local currency to purchase commodities available locally -- principally fertilizers and pesticides. Nitrogen fertilizer was provided to the program as a grant by West Germany. On September 19, 1966, Drs. Carl Ferguson and Francis LeBeau of A.I.D./Washington recommended that a regional project for wheat development with Rockefeller Foundation be approved which would include: (1) Technical Cooperation, wheat scientists in North Africa, (2) genetic materials, (3) training, and (4) coordination of cereal development for all North African countries.

In January 1967 Dr. John Gibler (Rockefeller) indicated that the Ford Foundation had expressed an interest in backing the project. The entire international group of Food and Agriculture Organization and foundations involved in better cereal production were enthusiastic about the project. Government of Tunisia officials having heard of the success in Pakistan requested help. Tunisia Mission Director Stuart Baron understood the problems exceedingly well. Tunisia could well be the center of wheat research and production activity with USAID assistance. Dr. Hugh Walker of Ford located in Beirut had also been investigating arid land possibilities. North Africa served as a possibility for agriculture development which the Ford Foundation could support.

Project Development in Morocco

In February 1967, USAID/Morocco submitted a proposal for a program to increase wheat production by 50 percent in Morocco by 1974. Based on the reports prepared by the TVA study teams, the project proposed to increase the scope of "Operation Engrais" by approximately 50,000 hectares per year to reach a total of 600,000 hectares by 1974 at which time Morocco could attain self-sufficiency in wheat. In order to reach this goal, the selection and multiplication of high yielding, fertilizer-responsive varieties was considered essential. In view of the limited experience with such varieties in North Africa, it was proposed that the introduction of such varieties take place relatively slowly. Seed of these varieties, sufficient to plant the entire fertilized hectarage, would be planned for the 1972-73 crop year. However, it was also noted that this portion of the program could be accelerated if conditions so dictated as the program developed.

The major constraint against a larger, more ambitious program was the lack of qualified technical personnel to organize and conduct the research, extension and education necessary for its success. The project proposal called for a staff of direct-hire USAID technicians to conduct this program with supplemental technical assistance to be furnished under a contract with the USDA or a land-grant university. The original proposal did not envision direct assistance from CIMMYT as was being considered for Tunisia.

Pending approval of the project, plans were made early in 1967 for a continuation of "Operation Engrais" with the use of local

currency and on-board technicians. Despite indifferent first year results due to below-average rainfall, plans went forward for an expansion of "Operation Engrais" toward a goal of 300-350,000 hectares for 1967-68

Development of the Regional Project

Interest of A.I.D. Mission Directors Adams (Morocco) and Baron (Tunisia) impressed Dr. Gibler so much so that he endorsed early shipment of seed wheat from Mexico. Despite strained U.S.-Algeria relations for various reasons in 1967, political leaders thought the cereals breeding program could be helpful. The Maghreb organization was considered as a parent body for greater regional involvement in the future. In addition to seed breeding and multiplication, the importance of training, conferences, publicity of results, and staff was stressed.

Early in February 1967 Dr. Ferguson and Dr. LeBeau prepared a draft proposal for the contract with CIMMYT and had talks with Dr. Wellhausen and Dr. Gibler which set certain targets: (1) center for wheat breeding, Tunisia, Morocco and Algeria, (2) variety testing, (3) training locals, (4) demonstration on selected farms, and (5) seed multiplication and production. Included was the self help need. Major justification did lie in helping these countries to produce more food to reduce imports and PL 480 requirements. Population planning was also suggested. In addition, local sources of fertilizer plus nitrate import of production made attractive areas of

possible development outside of wheat production. The A.I.D. Minnesota contract team study found Mexican varieties a definite advantage over Tunisian varieties because of adaptability in field tests, high yields and fertilizer response.

Tests during 1966-67 crop year by INRAT in Tunis (using Mexican varieties) out-produced local varieties again by as much as one-half. This convinced Stuart Baron and Agriculture Chief Beery plus Dr. Gibler and A.I.D./W to push ahead on a 45 ton trial demonstration planting for 1967/68 crop year. Eight varieties were selected: 10 tons of Senora 63, Inia 66, Jeral 66, and Tobari 66, plus one ton of Mayo 64, Pitic, Peniano 62 and Oviachi (durum) were planted.

Considerations in March 1967 provided the basis for developing a regional project to solve a common food shortage problem among several countries where eating habits were similar. The high homogeneity degree occurring in North Africa is particularly applicable to the food problem. Certain savings were envisioned in the regional approach. Comparative variety analysis over a wide area is most useful in measuring adaptability of new varieties or practices. Testing on a broad basis was considered desirable. Major insect and diseases could be tested to provide experience in large areas. In addition, the regional approach would save time and scarce technical personnel.

A paper in August 1967 stated the goal of a North Africa wheat improvement project would be to increase wheat production in the Maghreb within five years by 25 to 50 percent by means of development and

production of high yielding wheat varieties, use of fertilizer and improved farming methods.

In late December 1967, A.I.D. prepared a tentative budget for the next two years, including A.I.D. support only since CIMMYT had indicated support was not available elsewhere.

During 1967 after the Minnesota contract team arrived in Tunis, Mr. Baron asked the team leader, Dr. R. Dahl, to outline and study the economics of expanded wheat production. Conclusions reached clearly supported Tunisia's need to expand wheat production to offset imports, reduce foreign exchange needs and that factors such as pricing, land use, and management could be detailed to obtain a sound economic conclusion.

Director Baron in November 1967 along with Dr. John Gibler and David Heaps, Ford Representative in Tunis, initiated a high level New York meeting with Rockefeller/Ford interests and AID/W officials (Dr. LeBeau, W. H. Meinecke) also were to attend. A letter of December 12 from W. H. Meinecke to R. Peter Straus, Assistant Administrator for Africa, is quoted as a summary of the meeting intent.

"Simply and in brief, Rockefeller, Ford, USAID/Morocco and USAID/Tunisia are jointly developing a regional wheat development project for the purpose of (1) expanding and improving efficiency of food production (wheat); (2) transferring Rockefeller/Ford experience and know-how as demonstrated in Mexico; (3) multiplying tested wheat varieties by field tests; (4) supervising, directing and expanding

wheat breeding research in Tunisia now, Morocco next year, other Maghreb countries as appropriate; (5) training people in proven methodology; and (6) starting new wheat varieties adaptable to the climate, soil and growing conditions in Maghreb countries.

"Organization and Operation:

1. A.I.D. with the Tunisian Ministry of Agriculture and Rockefeller-Ford in the 1967-68 crop year expanded seed production of nine tested Mexican varieties by planting 45 tons in 32 farm areas for testing and multiplication of seed varieties.

2. Discussions with field representatives of Rockefeller and Ford, particularly in Tunisia and to a lesser degree with Rockefeller in Morocco, have generated the interest of both Rockefeller and Ford Foundations in the regional project.

3. All parties have agreed to meet in New York December 21 to discuss, organize, plan and develop the activity.

4. At the moment we see the possibility of FY 1968 expanded wheat multiplication in Tunisia plus new variety breeding and testing (i.e., FY 1968, 1,000 tons vs FY 1967, 50 tons seed planting). The Morocco program would follow in FY 1968 the pattern set by Tunisia in FY 1967.

5. Agriculture agronomists from both Rockefeller and USAID would with host country technicians and staff coordinate activities and evaluate results for further action.

6. AFR/ID and AFR/NA have discussed on several occasions with Rockefeller the general format for the project.

"Justification

1. To maximize the use of wheat breeding knowledge for increasing wheat output.

2. To help alleviate food shortages in Tunisia and Morocco.

3. To gain the Rockefeller-Ford research in Mexico know-how and research results.

4. To meet U.S. objectives for agriculture initiatives in developing countries.

5. To take advantage of Ford and Rockefeller's interest in a major AID consideration.

6. Regional in scope, yet started bilaterally.

I recommend that you give your approval on the general concept of the program and permit A.I.D./Washington and USAID/Tunisia officials to negotiate and develop a program for further consideration."

New York Meeting Conclusions (December 21, 1967)

For technical reasons Ford offerred to send Dr. Hill and Dave Heaps to Tunisia and Morocco in February, closely followed by a visit by Dr. Wellhausen. Dr. Gibler along with A.I.D./W officials also planned to visit the area to implement planning among the various groups. A.I.D./W was most anxious to obtain full understanding and agreement to the principles of regionalism for Tunisia and Morocco and be certain full cooperation and resources be allocated to that end in concert with CIMMYT's strong interest to become involved in a multi-country regional project. Rockefeller announced their plan to establish a regional center in Turkey for the Mediterranean area which would backstop the North Africa

project. Some of the aspects of the project reviewed were: (1) Ford's umbrella logistic setting in Tunis under representative Dave Heaps' direction; (2) Ford, following the survey, would determine extent of support of CIMMYT for the Tunis-based project; (3) Determination of host countries' interest, support, staffing and financing; (4) CIMMYT agreed to provide ample Mexican wheat supplies for the 1968/69 seed crop breeding requirements; (5) The Moroccan cereals program (Operation Engrais) required full evaluation to determine how best to coordinate and direct the requirements of a wheat breeding and expanded production program; and (6) A.I.D./W, based on past experience in bilateral projects, a TVA survey, a Stanford Research Survey of dryland and irrigation possibilities in Morocco were considering a five year project calling for an increase of 600,000 tons of wheat production by 1975. The proposal included four to five production agronomist and wheat breeders and full use of modern technology, including fertilizer, insecticides, etc.

It is important to note that during 1967 and early 1968 attention was directed to mechanical farming methods and good farm methodology. These innovations were proved out on the 32 scattered test plots. Extension agents saw and told of what A.I.D.-CIMMYT were and could do. Large signs were installed at each test plot, telling the story of wheat and implying the cooperative relationship among all parties.

The Tunisia Mission proposed a five year program expanding the production of these new varieties by 1972 to 200,000 hectares which would produce 400,000 tons of food. Of special significance was the Tunisian "official" interest; a large scale research farm was proposed for basic and applied research.

During this time plans were underway to greatly expand a very limited experimental wheat breeding work in Morocco and a five year 600,000 ton increase in the dryland farming area. This program dovetailed into the very successful Operation Cereals which is the organizational backbone of the proposed wheat expansion program. USAID/Morocco submitted and A.I.D./W approved a major project for the next five years which included U.S. owned local currency support, agronomists and other commodities.

Following the Rockefeller-Ford-A.I.D. New York conference in December 1967, Dr. LeBeau and W. H. Meinecke of A.I.D. and Dr. Gibler of Rockefeller visited Morocco in late January. During an overflight of the major wheat producing areas with Mission staff members, convincing proof of fertilizer results on spring grown wheat was observed. The obvious contrast between the dark green of fertilized fields and the faded green of the remainder was a clear display of the extent and effect of the Operation Cereals ("Engrais") program which had reached nearly 350,000 hectares during its second year.

Discussions were held with the Governor and his staff of the Meknes-Fes area. In addition, farm research and agriculture education

facilities were inspected. In Rabat, following extensive discussions with the USAID staff, major discussions were held with Minister of Agriculture Bargach and USAID/Morocco officials about the details of the wheat development program. Tentative plans for the research aspect of the program included several scientists being located in Morocco with supervision from the Tunis-based CIMMYT headquarters. As outlined in the project proposal, the Agronomy Advisor, Dr. Ralph Edwards, would provide overall project coordination in Morocco with additional technicians to be provided to supervise extension and production activities. Commodities would be provided from bilateral and regional A.I.D. project funds or would be imported under the U.S. agricultural sector loan to Morocco. Additional seed of tested varieties would be imported from the U.S. and Mexico for the purpose of research and expanding production in the short term. Other aspects of the program as outlined in the USAID/Morocco proposal included availability of fertilizer, credit, marketing, insect and disease control, field demonstration, storage, distribution, training, logistic support and budgeting.

A tentative agreement was reached covering the overall program. This received high level support from the Prime Minister, Minister of Finance, Minister of Agriculture and on the American side, Ambassador Tasca, Director Adams, Assistant Director Birnbaum, Dr. Gibler, Dr. LeBeau and W. H. Meinecke during a luncheon meeting. Everyone was dedicated to proceed and put into motion the plan to meet the fall 1968-69 planting season deadline.

The A.I.D. agricultural sector loan to Morocco which was under consideration obviously was important to support equipment, seed, fertilizer, chemical and other needs of the agriculture sector. During this meeting the issue of utilization of excess local currency was not clear. A.I.D. officials, however, indicated that the use of local currency had already been planned for the cereals program and that this use could be easily expanded to cover the aspects of the program involving CIMMYT.

A.I.D./W and Rockefeller representatives while in Tunisia along with Dr. Litzenberger, Director Baron made a field inspection of the 1967-68 crop year test plots. Each test plot was clearly marked and identified, indicating purpose of test, involvement of GOT, A.I.D. and CIMMYT. More than 32 test plots were on trial covering 1500 to 2000 acres. Nine varieties in the amount of 45 tons had been imported. At the time of inspection early spring growth ranged from three to six inches. Again, as observed in Morocco, the fertilizer and new variety impact was clear. The response of the Mexican dwarf variety was clearly superior to local varieties. It was apparent at that time that rainfall was the only item necessary for high yield and excellent performance.

Ford Foundation representative Dave Heaps along with Director Baron, Dr. Litzenberger and the team reviewed the future plan of operation of the program. Since Dr. Wellhausen of CIMMYT had not been able to meet with the team, certain aspects of the project's scope

could not be concluded. However, the Tunisian officials, including Minister of Agriculture and Minister of Plan gave their full support to the program. A.I.D. Director Baron had very successfully negotiated the basic requirements which included full cooperation of Tunisian resources including INRAT, extension services, seed growing groups, provincial governors, cooperatives. The Tunisian officials further agreed to provide land required for the cereals research center nearby Tunis.

The A.I.D. Program Loan to Tunisia was earmarked for import of seed, equipment and fertilizer. In addition the excess U.S. owned local currency was earmarked for the construction of the building facility and more importantly the support of the local cost for Tunisia staff. This support was for the initial period of operation of the research center.

It was a delightful experience to witness the enthusiasm of all parties involved, particularly in starting the third year of test plots and seed multiplication effort. Anticipation of a 50 percent increase in yield seemed well in hand.

Tunisia as the record indicates had required heavy imports from the U.S. and other wheat producing countries. This obviously affected Tunisia budget and foreign exchange. It seemed most essential for the Tunisians to produce a greater portion of their food requirements. Wheat and other cereal grain comprise the major food for Tunisians.

During the conversations it was evident that very close cooperation was required for all parties involved in order to develop the strongest effort possible. CIMMYT's role in coordinating and backstopping the research effort in both Tunisia and Morocco along with inputs and cooperation of the Governments of Tunisia and Morocco and the A.I.D. Missions who would provide technicians, commodities and management was all very necessary to make the plan a reality. One could see Washington's role as a catalytic/arbitrator or negotiator for the U.S. interest group. Since the individual Missions basically had a bilateral interest, A.I.D./W's input therefore was to see that the A.I.D. Assistant Administrator for Africa Peter Straus' policies on regional programs be carried out efficiently and effectively. Matters did not prove less difficult by having so many facets and individual interests involved. All had to keep the objective in mind for solving the food shortage problem of Tunisia and Morocco. Other A.I.D. programs related to the Wheat Development Program included population planning, PL 480 Titles I and II programs, health and education. All related in one way or another to the food gap problem in both countries.

Dr. Litzenberger possessed wide experience and qualifications for planting/breeding work envisioned in the program. He also had the full cooperation of CIMMYT and both Missions who agreed to his nomination as regional technical director with headquarters in Tunis.

Plans were formulated to begin one important facet of the project in training Moroccans and Tunisians in Mexico and having exchange field trips. In this manner the actual field trial tests could be observed first hand. A very considerable amount of discussion centered on the requirements for high level scientists as to type and location in the two countries. At the outset the senior scientists were to be assigned to Tunis and junior scientists to Morocco, with the stipulation that close liaison and direction would be by CIMMYT from Mexico City. In order to iron out details, Drs. Wellhausen and Gibler were to make further field inspections to consummate plans, make variety selections and make ready for new staff arrivals scheduled for September 1968.

Although the field team had a reasonably good idea of the manner in which the project was to proceed financing consideration called for a review with Dave Bell and Dr. Hardin of the Ford Foundation on February 13, 1968 in New York. Drs. Gibler and Litzenberger and W. H. Meinecke presented the project objectives, goals and plans. An agreement in principle for Ford's support was confirmed. The Ford Foundation assigned the project to CIMMYT. However, the Ford representative in Tunis would provide the logistic and umbrella support for the Tunis-based team. A.I.D. shared in the regional program in funding equipment needs for both Tunisia and Morocco as was necessary for the wheat breeding program and funds for two junior scientists to be located in Morocco.

Once these agreements were completed, negotiations began for procurement and shipment of wheat seed, fertilizer, equipment and provision of staff. By October 31, 1968 each country had received (or it was in shipment) a number of varieties from the U.S. and Mexico for the expanded production program. Contracts had been let early in the summer of 1968 for U.S. production of seed wheat. Heavy rains in the U.S., however, necessitated some waivers for Mexico seed purchases.

During the 1967-1968 wheat growing season, both Morocco and Tunisia had an excellent growing season and plentiful rainfall, all of which enhanced production results. In Tunisia the variety Inia 66 out-produced a local variety by 50 percent on dryland farming and 36 percent on irrigated land. Approximately 1,000 tons of new seed became available from the test plots. All of this was allocated for expanded production in 1968-69. Farmers who had observed the field tests were clamoring for new seed. Yields were as high as 77.6 bushels per acre on dryland and 103 bushels per acre on irrigated land.

In Morocco the variety Siete Cerros proved to be the best yielder with average yields of about 60 bushels per acre on rainfed areas and one yield in an experimental trail on irrigated land of over 120 bushels per acre. Considerable interest was generated among farmers and agricultural technicians by these results. A USAID-financed trip for a group of agriculture technicians and prominent farmers to observe the results being obtained in Tunisia won more supporters for the program. The director of the Moroccan Agronomic

Research Service and the extension director of "Operation Engrais" were sent to Mexico in April to observe CIMMYT's program at first hand.

The first operational and technical meeting has been scheduled in Tunis for late October 1968 in order for CIMMYT, A.I.D./W and field representatives to finalize plans and formulate programs for the future. These plans should cover the basic research program with selected varieties, an evaluation of the results obtained, and to develop the best manner for expanding seed production in the wheat producing areas. Local agricultural officials from both Morocco and Tunisia are participating.

Conclusion

From the wheat trial experience begun more than two years ago in both Tunisia and Morocco, Mexican wheat varieties have performed extremely well as evidenced in the Tunisia results during the 1967-68 crop year. The program as outlined involved wheat breeding and expanded wheat production and would provide for Tunisia and Morocco a fair measure of successful food production during the next five years. A 50 percent total increase is feasible. High enthusiasm among all participants has been evident following the worldwide experience in Pakistan, India and Turkey.

Elements of input by Rockefeller-Ford through their Mexico-based CIMMYT organization has added a full measure of support which the host country and A.I.D. technicians can rely on heavily.

Not enough good can be said for the initiative, drive, interest and understanding extended by the Tunisia and Morocco Mission Directors and their staffs. Negotiations involved many interests including Washington, Ford and Rockefeller Foundations, CIMMYT and the host country officials. Distance made it difficult to communicate fully and completely with everyone on each issue. A.I.D./W's role was to arbitrate and to keep the effort going positively toward a workable conclusion without jeopardizing the entire program.

Counsel and advice of outstanding scientists and experts in wheat development of other parts of the world had to be listened to. In this project the U.S. and to a greater degree the countries involved could not afford to lose CIMMYT's know-how and staff. To that end, major objectives of the Missions and the foundations have been obtained.

Admittedly, some of the goals had to be deferred until additional experience is in hand. We cannot too long defer or ignore however the fundamental requirements of millability and baking qualities of new wheat varieties. The maintenance of customer acceptance of wheat products and other cereals will increasingly become important. In today's supply, a citizen of a lesser developed country may accept wheat because it is food. However, when a more ample supply situation becomes a reality, he will become discriminating and will demand a quality product to his liking and taste. Laboratory, milling and baking test components are necessary as a major adjustment to the project development. CIMMYT understands this need. The Missions

and A.I.D./W should keep this in mind for future consideration. Global interest will spread as results become known to Maghrebian and other countries of the world. CIMMYT can make the information available. The project holds very tangible promise for filling the food gap in North Africa.