

ALGERIAN WHEAT PROBLEMS

by

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Upon the request of the Algerian Government to the FORD FOUNDATION in TUNIS, a committee made up of Piero BRONZI, Willis L. McCUISTION, Arthur KLATT (CIMMYT, MEXICO) and Norman E. BORLAUG, visited Algeria between June 16 and 19 to study Algerian wheat production.

The committee, accompanied by Mr. N. KADRA, who is in charge of the so-called "Mexican Wheat Program" made a two-day trip by auto from Algiers to Oran and return to study Algerian wheat production problems; subsequently discussions concerning our observations were held with Algerian officials. This brief report is a summary of our findings.

Algerian wheat production potential is very great but the average yield of wheat at the present time is very low. It is almost certain that yields have dropped since independence; this in part has been due to lack of technical leadership, since there are very few trained scientists in Algeria at the present time.

Moreover, the limited number of trained agronomists that have been available, up to very recently, have had to assume many different responsibilities.

Last year, the government of Algeria became interested in the Tunisian-Ford Foundation-AID-CIMMYT wheat production program. They visited Tunisia to observe it first hand and in the fall of 1969 launched their so-called "Mexican Wheat Program." Seed was imported from Tunisia to sow about 4,000 hectares, under Mr. KHADRA's leadership. We saw some of these

plantings. The tremendous success of the 1969-70 Tunisian Wheat Program now has resulted in some officials in the Government of Algeria insisting on expanding their Mexican Wheat Program to 200,000 hectares in 1970-71. The danger now is that it all looks too simple to the Government officials, at least at some levels, and certain precautions must be taken if a realistic program is to be implemented successfully. The program must be expanded more slowly, because of limitations in the agronomic, economic, administrative and personnel problems if it is to be successful.

Some of the observations made during our trip which bear on these considerations are outlined below.

Agronomic Considerations

Much of the information that has been developed in Tunisia during the past two years will have direct application here in Algeria, once the validity of the Tunisian results has been checked in Algeria in a number of different locations. For example, it was apparent that the varietal adaptation is very similar. Varieties such as Tobar and Penjamo 62 which have been found most suitable in the heavier rainfall areas in Tunisia, where Septoria is a problem, are also probably the most reliable for similar areas here in Algeria, whereas a variety such as Inia 66, which is very high yielding and broadly adapted, will find use largely in areas of more moderate rainfall where Septoria is less of a problem. The rust diseases in Algeria pose no particular problem since the Tunisian varieties of Mexican origin adequately covered the disease spectrum.

The cultural practices that are needed to successfully grow Mexican wheat varieties with the expectations of harvesting high levels of yields will be similar to those that are now being used successfully in Tunisia. Fertilizer applications will probably be needed at about the same levels, and made up of the same proportions of plant nutrients as those that have been found effective in Tunisia. Nitrogen is needed everywhere. Phosphate is also ^{needed} in insufficient supply and will need to be applied everywhere where wheats are growing. In high rainfall areas, that is 500 mm and above, 100 kilos of nitrogen per hectare and perhaps 80 of available phosphate P_2O_5 will probably be needed. There is no evidence to

warrant the use of potash. During the course of our tour we only had one opportunity to see a well laid out fertilizer varietal trial - that was at the FAO farm near Debré. If a production program is launched and the Ford Foundation and CIMMYT are to be involved, then we should draw heavily on the Tunisian experience, in all of the technological aspects. The situation on wheat production in Algeria is very similar to that in Tunisia. If this is done, it should be able to move this program forward rapidly. From an economic standpoint, however, Algeria is a very different situation from Tunisia. Budget, per se, is not a serious problem to agricultural improvement. It is estimated at the present time that approximately 60 million dollars peryear is being put into agriculture by the Algerian Government. Much of this is invested in the state farm system. At the present time, very little support, if any, is going into the private farm sector. It so happens that since the nationalization of the colon farms, at the present time all of the good agricultural lands are in the state farm sector and mostly the mountainous rolling land of poor productivity remains in the small farmers sector. The most serious social problem is now in that part of the economy which is held by the private small farmer.

There are some officials (i.e., S.R. BOUKLI) in the Government of Algeria who feel that a large dynamic program should be launched to produce Mexican wheat during 1970 and 1971. He and several others believe that attempts should be made to grow 200,000 hectares during the forthcoming season. This is an unrealistic approach, for there are several reasons why this cannot be realized:

- 1) Shortage of technical supervisory personnel
- 2) Shortage of transport for moving the required amounts of fertilizer in the short period of time that is now available.
- 3) Availability of fertilizer would also be a third problem.

But more than any other the success of failure of a large program will depend largely on the availability of people adequately trained to execute it. These are not in sight at the present time for coping with a 200,000 hectare project. Today, while meeting in the planning office we recommended that Algeria not extend themselves beyond an attempt to grow

40,000 hectares of Mexican wheat during the next year.

Although most of the agricultural production at the present time is in the state farms sector, it is still important to consider certain basic economic problems; for example: the ratio of price of grain to price of fertilizer, even though an order can be imposed on a state farm to fertilize. Unless there is an economic incentive for the farm director to apply fertilizer, with the expectation of increasing greatly the income, and consequently the bonus that will be paid to the farm workers, he will be reluctant to fertilize as recommended, and no imposition from above is likely to be very successful. Should the project fail because of diseases, or frost, or some factor that is beyond the control of an individual, somebody will have to suffer the consequences, therefore, it is wise to train people so that the area sown can be adequately handled. If it is successful it can be expanded subsequently, at a reasonable rate, for example, for 1970-71 to 40,000 hectares, for 1971-1972 to 100,000 hectares, etc. If this is done, a training program for supervisors can probably keep pace and provide suitable leadership.

There is one great advantage here from the standpoint of fertilizer. Algeria now has a large program of fertilizer plant construction under way, both for ammonium nitrate, and for super phosphate. Most of this production will become available during 1973. It is the aim of the Government to stimulate and encourage the use of fertilizer and this could be done with a well organized extension program. If properly implemented it will greatly expand agricultural output, not only in wheat but also in other crops. It should ^{be} ^{ed} point out here that if a highly successful production program can be launched with the so-called "Mexican Wheat Production Campaign" this will have many indirect benefits that will pay off on other crops. The success and the fever for change that will be generated will spread in many cases under its own initiative to other crops. Once a farmer, either the collective or private farmer, learns how to successfully fertilize one crop, he will begin to look for ways to improve the productivity of his other crops by using fertilizer and other improved cultural practices on them as well.

On June 15 our group had an opportunity to speak to a number of people in the planning office. With them we discussed the feasibility of launching a Mexican Wheat Program to handle a maximum of 40,000 hectares during the next year. We pointed out the dangers of trying to move too fast, for example, in trying to handle 200,000 hectares, because of shortage of trained personnel, shortage of transport for mobilizing fertilizer and mobility of technicians and many other problems that undoubtedly would arise. It was pointed out also that if a production program was to be successful and to serve as a pilot model, it would have to have a straightforward and simplified administrative set up which would permit the implementation of recommendations from the technical director (M. KADRA) directly to the various levels of different organizations that intervene with the state farms. If the technical director is cut off from the state farm commissar or state farm manager, then, this project will fail. He must not be forced to transmit his knowledge and to have his employees report to the director of the state farm organizations or there will be a tangle of bureaucratic procedures that is almost certainly sure to sabotage the whole operation. The same sort of simplicity of operation must be devised for the utilization of research and extension budgets. It has been pointed out that although there were allocations made for the purchase of four vehicles during the past year for Mr. KADRA's program, because of complications in procurement, red tape and bureaucracy, none of these vehicles have arrived at the project level at the present time, more than nine months after the approval was given. Similarly a complicated bureaucratic procedure of red tape is involved in moving technical personnel from one base of operation to another. It requires at the present time a letter, authorizing such a mission signed by at least two administrative officials at different levels. Irregardless of the system of government, if a country is to have a functional research, extension or production organization it cannot be achieved by cumbersome bureaucratic and administrative organization. If a scientist is not trustworthy, then he should be replaced. We all know that one cannot develop a functional organization by preventative administrative paper control measures. I believe that we got this point across to the officials in the planning office who seemed to be very realistic about our whole philosophy

of the program orientation. We were all tremendously impressed with the caliber of the people who were present at the meeting in the Planning Office. Included were M. A. HOUHAT, Agricultural Counsellor to the President of the Republic; Mr. OURABAH, Assistant Director of the Plan; M. H. Ali YOUNES, Director of the Agricultural Plan; M. ADEZLANE, Assistant of Agricultural Plan; M. A. GOLUSIC, F.A.O. Expert; and M. M. KADRA, Director of the Mexican Wheat Campaign.

The greatest restraint on all development throughout Algeria, Tunisia and Morocco, is the shortage of trained people. There is an acute shortage of Ingeniero Agronomos or BS degree equivalents in all disciplines. There are no people with advanced degrees. Even at the adjoint technique level or the sub-professional level who will by necessity be required to assume much responsibility for the agricultural programs for the next five to ten years, there is an extreme shortage of manpower. At the present time the so-called "Mexican Wheat Project" is under the directorship of M. KADRA, a very confident ^{and competent} young man and twelve young adjoint techniques. One of these is located in each of the different administrative areas (provinces). There is, however, no transportation for these men, and all operations are done by telephone, or by borrowing a vehicle from some other government office, which is both time-consuming and requires no end of paper work. It is amazing that as much progress has been made on wheat as has been achieved under these very adverse conditions during the past year.

At the present time, if Algeria is to launch an Agricultural production program, it cannot wait for the Agriculture schools to start turning out a large number of technical people, which is being programmed for at present. We must take the adjoint techniques that are available now, and give them rapid training in Tunisia, and in CIMMYT in Mexico, to improve their capabilities. ~~Procedure should be used~~ ^{for training one or two Ingeniero Agronomos.} We pointed out both to the people in the Planning Office and in the Ministry of Agriculture, that CIMMYT philosophy on training is simple and straightforward. We want well motivated people; we want young people who have good intellectual and academic ability, because once they have finished the practical training with us, we hope that after several years of experience some of them will become candidates for advanced degrees. We want people who have good health so that they can stand the strenuous physical work

which is a part of becoming a functional agronomist; and we demand that the government of any country for which we train people assure these young trainees that once they have finished the training program, they will be reinstated and supported in the project for which they were trained. We have indicated to government officials at many levels the importance of developing a successful wheat program - since this is their first major agricultural program effort. If the wheat program is successful, the spirit of a "winning wheat team" can be used to initiate other programs in research and production on other crops. If, on the other hand, the Government of Algeria begins to transfer some of these trained people who have begun to show progress in the wheat program too soon to other crops, they will destroy the wheat program, and they also will fail on the other projects to which they are assigned. If M. KADRA is to be successful in his 40,000 hectare program for next year, he will need another twelve adjoint techniques, since currently the adjoints techniques in each province, in addition to being responsible for the wheat program are responsible for all the other crops as well. Currently an adjoint technique can spend only a small amount of his time on the wheat project. Next year, the wheat project must have at least 10 to 12 vehicles for transport. M. KADRA must also have one Ingeniero Agronomo to assist him if the program is to be organized as it should be.

It was pointed out that CIMMYT gives practical training designed to improve the skills of both adjoints techniques and Ingeniero Agronomos. The CIMMYT training is largely "learning by doing." We have found it highly effective in transforming the wheat production programs in other countries. Exhibit "A" of such a success was the Ford Foundation Accelerated Wheat Production Program in Pakistan. The training program also has had impact in many other countries of the Near and Middle East as well.

Research at INRA

Agricultural Research in Algeria is in its infancy. Today, however, we went to INRA and were pleased to find three young French scientists working with a group of young Algerians. The Algerian technicians were young, capable, and apparently very interested. The French scientists have only been in Algiers for six months, but they have made good progress in

getting research under way on wheat. Among the Algerians assigned to INRA there are some young enthusiastic people; there are also one or two ultra conservatives that one always finds in all countries. These ultra-conservatives are always the greatest obstacle to progress. It appears that these built-in obstacles to change can be circumvented if a program is launched in which Ford Foundation and CIMMYT is involved. These obstacles to progress are not new in our experience.

If the research work is to be strengthened it must include agronomic research, (meaning soil fertility, cultural practices) it must include plant breeding, plant pathology and entomology. Subsequently other disciplines can be added as needed.

INRA at present does not have adequate facilities for experimental plots. However, within the next year, approximately 400 hectares, about five kilometres from the INRA headquarters will become available. At the present time, a large portion of the area that was formerly given to experimental plots has been taken over for the building of the new agricultural school; but from the physical facilities of the INRA, a separation of five kilometres is not serious, and at this location adequate land is available. While we were at INRA we pointed out and explained to their staff the international aspects of the CIMMYT wheat program (that CIMMYT and the Ford Foundation-Rockefeller Foundation, the Mexican Government) has been involved in for many years. We gave them an idea of how it is handled and how it is coordinated with national programs in many parts of the world. I think that before we left we had changed many ideas about the possible value of collaboration with the Tunisian, Moroccan and Mexican programs, from what they were at the beginning of the meeting. I am not sure, however, that the Director of Research of INRA was convinced, but with this possible exception, virtually all of the other people, I am sure, had changed their ideas diametrically from what they were when the discussion began.

What are the challenges or opportunities for the Ford Foundation and CIMMYT in Algerian Agriculture?

We believe that the Ford Foundation and CIMMYT jointly have a unique opportunity to assist the Government of Algeria in the training of

young scientists and assisting in developing research in the afore mentioned disciplines. We believe that our know-how in research and training is unique and we could help them move forward aggressively. We have a lot of genetic wheat materials available, not only at the CIMMYT base but also in the Tunisian program, the Pakistan, the Indian, the Lebanon, the Turkish, and the Argentinian program, all of which can be brought to Algeria when needed, or when they are in a position to exploit its potential value.

Although the Algerian Accelerated Production Program of Mexican Wheat is very important (prime importance to Algeria) we feel that CIMMYT and the Ford Foundation should not become directly involved in this project at the present time. It might be desirable to serve in a minor role as a consultant to their overall Mexican Wheat Production Program effort. If we were to participate directly in this production program, it would be absolutely necessary to assign here at least one of our most experienced agronomists to supervise with the coordinator, M. KADRA the production effort. In the first place, CIMMYT has only a few experienced scientists who can bring together all of the disciplines which are involved in wheat production, namely agronomy, soils, breeding, pathology and entomology, as well as a good sense of farming. This breadth of capabilities is something that comes from wide experience. At the present time we have only three, or at the most, four people with this experience, and they are already committed to programs in other countries. Therefore, if we began to use inexperienced people in the production program at the present time, and at the same time assume the responsibility for the success or failure of this aspect of the program, we are likely to fail. We suggest that anything that Ford-CIMMYT has to do with the production program be confined to perhaps one or two visits each year by the experienced people as friendly consultants, but nothing more.

This, in general, summarizes the situation in Algerian wheat production. If the forementioned programs are implemented, it should be feasible to produce the wheat that Algeria needs within five years. At the present time the production runs about 1,800,000 tons and consumption runs about 2,600,000. The deficit or difference being between 600,000 and 700,000 tons annually, depending on the season. Consumption is growing

rapidly, and the production must be increased, not only to keep pace with the population growth, ~~but also~~ *but also* to correct the deficit.

This can be done, and done within five years at the maximum if the program is attacked vigorously. This is the challenge.

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