

Islamabad, October 20, 1968

Report to:

His Excellency Field Marshal Mohammad Ayub Khan  
President of Pakistan  
President's House  
Rawalpindi

Dear Mr. President:

In our meeting on October 18 in Rawalpindi you requested that we put our views in writing on a number of points covered during our discussion. In the report which follows you will find our attempt to review these points.

We are grateful for the opportunity to have participated in our own small way in your exciting agricultural revolution, and look forward with keen interest to its future development.

Respectfully submitted,

*F. F. Hill*  
*per R.H.S.*

F. F. Hill  
Special Consultant, Agriculture  
International Division  
The Ford Foundation  
New York, N. Y.

*N. E. Borlaug*  
*per R.H.S.*

Norman E. Borlaug, Director  
Wheat Improvement  
International Maize and Wheat  
Improvement Center  
Mexico

Pakistan is now attaining an increase in agricultural production which is unexcelled by any country in the world at any time in history. If it can sustain this rate of growth, and there is good reason to believe it can, it will provide many developing countries with a true inspiration, feed its people well without food assistance from abroad, improve levels of income in the countryside, and create a solid agricultural base on which to develop in many other fields. The people and the leadership of Pakistan are to be congratulated on their hard work and achievement so far.

But this is not the time to rest on laurels and expect the agricultural revolution to continue without positive and constant guidance. The success in wheat production this past season in West Pakistan will soon be matched by a comparable rate of increase in rice production. Maize, too, will increase dramatically in West Pakistan; and, given appropriate attention, other grains and crops will follow suit. In East Pakistan the problems are greater and progress has been slower; but there are hopeful signs there too.

Expanding agricultural production is creating in Pakistan entirely new sets of requirements. From an economy of food scarcity, Pakistan will soon be in a situation of general grain surplus.

This means that the task ahead is to sustain progress in food grain production and initiate progress in the production of other crops and livestock products. Furthermore, as the agricultural revolution continues, the nation will be confronted with a whole new network of inter-related social and economic issues. Keeping agriculture moving, and at the same time making the right economic and social choices, will comprise a more difficult challenge and require more complex analysis and difficult decisions than Pakistan's agriculture has yet faced. Well trained manpower, accurate and up-to-date data, and sensitive decision making will have to be part of the formula for success.

Most of our time has been spent looking at the agricultural research situation in both East and West Pakistan. We have also reviewed other agricultural questions. Our opinions and recommendations on a number of highly important questions of agricultural research and policy are offered to you, Mr. President, with humility and with full knowledge that some of these issues are controversial. Nevertheless, we would be less than helpful if we did not state our views on these matters forthrightly, knowing full well that you and other leaders of the agricultural revolution in Pakistan are fully capable of judging their value.

1. COORDINATED, PRODUCTION-ORIENTED, CROP RESEARCH PROGRAMS HAVE DEMONSTRATED SUCCESS IN PAKISTAN WHERE OTHER APPROACHES HAVE FAILED. THIS SUCCESSFUL FORMULA SHOULD BE CONTINUED AND EXPANDED TO OTHER MAJOR CROPS.

In West Pakistan, one crucial reason for the success of the wheat program has been the province-wide coordinated program with the relevant scientific disciplines focusing attention on wheat research and production. The new technology generated was supported by a strong extension effort. The breakthrough thus attained in wheat will soon be matched by rice and maize. In all three cases, coordinated patterns have prevailed. Expanding this approach to other major crops such as cotton, jute, soyabeans and perhaps livestock improvement, offers the best chance for success. This system of coordinated programs should be expanded, protected, and strengthened. The coordinator of each crop program should have sufficient authority and financial control to get the task done.

In our opinion this system offers the best chance of rapid success in both East and West Pakistan. Although some other approaches (such as mutation genetics) to the search for better plant varieties and improved production technology may be more glamorous, Pakistan at this stage should place highest priority on the straightforward

approach that has produced results in the case of wheat, rice and corn. The costs are much lower; the chances of success are far greater.

2. PAKISTAN MUST HAVE ITS OWN RESEARCH INSTITUTIONS AND SCIENTIFIC MANPOWER IN THE AGRICULTURAL SCIENCES.

Pakistan cannot rely solely on innovations from the International Center for Maize and Wheat Improvement (Mexico), and the International Rice Research Institute (Philippines), and other outside sources. It must continually test and adapt what it can get from abroad, but it must innovate as well. The nature of agricultural production and the underlying biological sciences dictate the need for a strong agricultural science base within Pakistan. This means that Pakistan must produce increasing numbers of well-trained young scientists in her universities. It must develop and support agricultural research organizations that will provide young scientists opportunities and encouragement to make the maximum contributions of which they are capable.

Thus while continuing strong relationships with international centers and making rapid use of new breakthroughs, Pakistan must make every effort to increase the quantity and quality of its own agricultural research.

3. THE AGRICULTURAL UNIVERSITIES HAVE AN IMPORTANT ROLE TO PLAY IN AGRICULTURAL RESEARCH, BUT THEIR MAIN CONTRIBUTION MUST CONTINUE TO BE THE EDUCATION AND TRAINING OF AGRICULTURAL SCIENTISTS AND SPECIALISTS.

Demand for highly trained manpower in agriculture will increase rapidly in the years ahead and the main supply will come from Lyallpur, Mymensingh, and other agricultural institutions. The educational targets of these institutions must be kept uppermost. But they must also have active research programs, adequately supported, to keep the young faculty members of these new institutions intellectually alive and to serve as training grounds for future scientists. At both Lyallpur and Mymensingh, coordinated, crop-oriented research projects are taking shape and should be supported.

We suggest that at this stage in Pakistan's agricultural development, particular attention should be given to research and manpower training in the fields of plant protection, water and soil management and agricultural economics including marketing as well as production economics. This is not to play down or under-estimate the importance of other fields. But in Pakistan, where water and soil management is of critical importance in both provinces, where insects and plant diseases can be devastating (particularly in East Pakistan) and where unsound economic decisions at this stage can easily retard or even

prevent economic and social progress, as has happened elsewhere in more than one instance, it is essential that these fields be in no way neglected.

4. IN EAST PAKISTAN, THE AGRICULTURAL RESEARCH PROGRAM NEEDS, ABOVE ALL, AN IMPORTANT SUCCESS.

Enthusiasm is often under-rated in agricultural development. As happened in West Pakistan, one major accomplishment touches off others within a research service. Years of little or no progress weigh heavily on the whole agricultural research service of East Pakistan. One breakthrough, one success would lead to others, and the research service would begin to contribute the way it should.

We agree with the priorities of the current strategy to push for an expanded irrigated acreage during the dry, boro season. Low lift pumps and tube wells are expensive, but when combined with improved varieties and production practices, they will make a major contribution to assured production, stimulating scientists as well as farmers to greater efforts.

However, opportunities for increasing production during the aus and amon seasons should not be neglected. East Pakistan should move quickly and vigorously to build up its accelerated rice research and production program patterned after the coordinated programs that have been so successful in West Pakistan. A sharply focused

production-oriented program under the leadership of a well-qualified, hard-driving director with an adequate budget and sufficient freedom of action to get the show on the road is long overdue.

Vigorous attention should be given to developing improved varieties and practices for use in each of the three seasons--aus, amon, and boro. Even a modest ten per cent increase in aus and amon yields would meet self-sufficiency targets. Promising new IRRI selections now being tested in East Pakistan suggest that even greater increases in yields than this are within reach.

5. IN WEST PAKISTAN, THE COORDINATED CROP IMPROVEMENT PROGRAMS SHOULD BE STRENGTHENED.

Now that this approach to research and production has been shown to work in West Pakistan, it should be strengthened and expanded to other crops.

It is equally important to strengthen the ongoing coordinated programs. Sufficient funds should be provided the coordinator of each crop improvement program to operate his program effectively throughout the province. He should have administrative control over all personnel assigned to the program, be given authority to spend funds within an approved budget according to the needs of the program, and be held responsible for results.

Each of the three regional agricultural research institutes in West Pakistan should serve as the main headquarters for one or more province-wide coordinated programs. The allocation of programs to research institutes should be based on the importance the particular crop has in the region, local research competence and provincial priorities.

6. IN AUGMENTING THE RESEARCH ROLE OF THE CENTRAL GOVERNMENT, THE INITIATIVE AND SPIRIT OF THE PROVINCIAL ORGANIZATIONS SHOULD BE PROTECTED AND NOURISHED.

Research in West Pakistan is on the move and it should be encouraged to grow along lines already proven successful. The role of the central Agricultural Research Council should be redefined to include the allocation of central government funds to integrated programs, the granting of training fellowships, and broad evaluation and coordination functions. A small grants program can be made to serve a useful purpose, but it should be of a size and so administered that "projectitis"--i. e. an overwhelming swarm of small projects--does not become a serious disease within the research establishment.

The Council should not get into actual operation of research programs which would be competitive with or detract from the coordinated crop improvement programs within the provinces and university research.

Although we agree in many other respects with the recommendations of the Joint Pakistani-American Research Team report of April 6, 1968, we disagree with the recommendation concerning the centralization of agricultural research.

7. AS AGRICULTURAL MECHANIZATION COMES TO PAKISTAN ,  
AS IT MUST, GOVERNMENT POLICIES SHOULD ENCOURAGE THE  
MECHANIZATION PROCESS TO EVOLVE NATURALLY.

Emphasis should be on:

- 1) Flexibility in respect to kinds and sizes of tractors and equipment,
- 2) Machinery which does not unnecessarily replace labor, and
- 3) Items which can be manufactured to satisfactory standards in Pakistan.

Let nature take its course with a minimum of government action and subsidy, direct or indirect. This will lead to demand for different types of power units and equipment of varying sizes that will best fit Pakistan's wide variety of physical and economic environments. There will be need for large combines but also for simple threshers; for 60 horsepower tractors but also for small tractors in the 5 to 15 horse-power range with appropriate equipment. And it should not be overlooked that work by private parties on a hire charge

basis as well as small machinery provide an efficient way for small farmers to gain the advantages of mechanization of critical operations without the necessity of making excessively high capital investments, of combining farms or unnecessarily replacing labor.

Some machinery can facilitate double and triple cropping and greatly improve timeliness of operation. But imported complex machinery also consumes foreign exchange, requires skilled operators and maintenance personnel, and must displace farm labor in a country where the agricultural sector now has to absorb an addition to its labor force of about half a million persons annually.

Pakistan needs a cautious, flexible approach to mechanization. The one clear present exception to this suggestion is in processing for export markets, as in the case of rice in West Pakistan. The Government is moving quickly to bring in modern rice dryers and milling and processing equipment and these efforts should continue without delay.

8. WE URGE THAT STEPS BE TAKEN TO IMPROVE THE PERSONNEL SYSTEM WHICH AFFECTS ADVERSELY THE CAREERS AND PRODUCTIVITY OF AGRICULTURAL RESEARCH SCIENTISTS.

We recognize that this is a thorny problem, but some way must be found to reduce the importance of seniority as the basis of advancement and increase opportunities for promotion on the basis

of merit and accomplishment. We know of cases in which scientists trained to work on one crop had to transfer to another in order to have a chance for advancement within a reasonable period of time. Such cases are not unique to Pakistan, but this country is now on the move in agriculture which makes it imperative that a more rational personnel system for agricultural scientists be installed.

9. EXPERT ATTENTION MUST BE GIVEN NOW TO THE NEW GENERATION OF AGRICULTURAL DEVELOPMENT AND PLANNING ISSUES IN PAKISTAN: ALTERNATIVE CROPPING PATTERNS, EXPORT MARKETING AND ECONOMIC POLICY TO SUSTAIN PRODUCTION INCREASES.

The sudden move from grain shortfall to an economy of surplus can cause imbalances thus making the planning task more crucial and complex. For example, the combination of advanced production technology, price supports, and availability of inputs has brought rapid progress in grain production. This has left behind technologically other important crops such as cotton and jute, both important earners of foreign exchange. Modern production technology for these crops is not easily available to farmers in Pakistan. Pakistan must now overcome this lag. It should also tie production to improved technology for oilseeds, legumes, fruits, and even livestock and poultry. Without attention, these and other potential agricultural products will be crowded

out, although some of them should have an important place in Pakistan's agricultural future.

The new surpluses also dictate need for a constant and expanded effort to keep in touch with marketing and export potential. A marketing strategy must be evolved, based on careful analysis of accurate and up-to-date data. Pakistan's comparative advantage in export crops must be analyzed, keeping in mind that advantages change as technology and other factors change. Pakistan must keep abreast of these shifts and changes and must learn to compete efficiently in international markets.

Planning in the agricultural sector must fit together with other sectors so that inputs are available when needed and so that the total system is made up of reinforcing parts. Fortunately, Pakistan has experience with planning and has an effective organizational framework which should serve it well to meet this important need.