REPORT TO THE CONGRESS

U.S. Technical Assistance To Support Indian Agricultural Development

B-161854

Agency for International Development
Department of State

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

JUNE 22, 1972

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-161854

To the President of the Senate and the
Speaker of the House of Representatives

This report presents the findings resulting from our review of U.S. technical assistance to support Indian agricultural development.

Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretary of State; and the Administrator, Agency for International Development.

Elmer B. Staats

Comptroller General
of the United States

Contents

ABBREVIATIONS

AID	Agency for International Development
GAO	General Accounting Office
GOI	Government of India

COMPTROLLER GENERAL'S REPORT TO THE CONGRESS

U.S. TECHNICAL ASSISTANCE TO SUPPORT INDIAN AGRICULTURAL DEVELOPMENT
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D I G E S T

WHY THE REVIEW WAS MADE

The Agency for International Development (AID) has provided increasing amounts of technical assistance to India for agricultural purposes. This assistance has risen from $1.3 million in fiscal year 1966 to $5.4 million in fiscal year 1971. A total of 82 U.S. technicians were working under contract to AID in India as of December 1971 and were assigned to agricultural assistance. The efforts of these technicians are directed primarily toward development of Indian institutions for agricultural research and extension to make them responsive to problems arising from the introduction of new technologies. (See p. 17.)

The General Accounting Office (GAO) reviewed the activities of AID's agricultural technicians to ascertain what they were accomplishing and what problems hampered their efforts.

FINDINGS AND CONCLUSIONS

In GAO's opinion the U.S. technicians in India are qualified and are interested in helping India to increase agricultural production, and many of them have been placed in positions in which the work can have, and has had a significant impact. The results of their efforts are mixed: some projects have been successful; others have not.

Project objectives established by AID are consistent with, and generally parallel, the broad goals established by the Government of India (GOI). AID's activities, however, are only a fraction of the total agricultural effort; therefore, meeting the Indian goals depends almost entirely on the efforts of India itself. (See p. 7.)

Despite substantial problems India is increasing its food grain production Since 1950 production has increased at an average annual rate of about 3.3 percent. On a per capita basis, the average annual rate of increase has been about 1 percent during this time. Recent annual production rates have been greater. (See p. 10.)

India's goal of food grain self-sufficiency probably will not be realized on a continuing basis unless rice production is increased in a manner similar to that in which wheat production is increased and unless India's population growth is stemmed. (See p. 12.)

Because AID project objectives are in general terms, they bear little, if any, resemblance to the activities of U.S. technicians and cannot be used for gauging the technicians' achievements. (See p. 9.)

The technicians' effectiveness is limited by factors mostly beyond their control. Indians themselves must resolve problems stemming from these factors, and U.S. assistance must adjust to them. These factors include Indian economic and cultural conditions, regional loyalties which limit interstate cooperation, inadequate extension services, and insufficient operating and construction funds. Also the technicians have been hampered by problems--which AID can help to solve--in areas of planning, counterparts, and logistical support. (See p. 17.)

RECOMMENDATIONS OR SUGGESTIONS

GAO made several suggestions to the AID Administrator concerning the need for better definitions of AID project goals, improved Indian counterpart arrangements, logistical needs of U.S. technicians, and evaluation and review of technicians' efforts. These are now shown in AID's comments on pages 46 to 50, appendix III, along with AID's response to each.

In GAO's opinion, the actions being taken as set forth in AID's comments should achieve the objectives of GAO's suggestions except in those instances in which it was proposed that AID enter into discussions with GOI officials. In December 1971 the United States suspended economic loan assistance to India amounting to about $80 million as a result of hostilities between India and Pakistan at that time. In view of the current uncertainty in respect to future U.S. assistance to India, GAO believes that it is inappropriate for it to recommend that such discussions be pursued at this time.

The AID Administrator should, at such future time as he deems conditions in India suitable, direct the U.S. AID Mission Director in India to seek discussions with GOI officials to:

--Secure the appointment of Indian counterparts who possess the skills necessary to assist in carrying out the project, who are receptive to working with AID technicians, and who understand the role of the U.S. technicians in the program.

--Eliminate or reduce the problem of the high turnover rate of Indian counterparts by obtaining authorization for longer tours of duty for personnel in these positions.

--Have dependable equipment and reasonable expenses furnished to the counterparts.

--Obtain evaluations from GOI officials of the U.S. technicians' work prior to the end of their tours of duty and seek suggestions from the Indian officials for strengthening the planning and application of AID's efforts.

AGENCY ACTIONS AND UNRESOLVED ISSUES

AID stated that it agreed with most of the draft report's observations and proposals on project problems but that it differed with GAO's findings and conclusions with respect to:

--The degree of participation of small farmers in improved agricultural technology.

--The extent of progress made in agricultural development in India.

--Some aspects of the problems limiting effectiveness of contract technicians.

AID stated also that it was aware of the specific problems cited by GAO as needing improvement.

GAO is of the opinion that the degree of participation of small farmers in improved agricultural technology is unknown. Information obtained during the review revealed that small farmers' participation was a problem.

In respect to the extent of progress made in agricultural development in India, AID later furnished GAO with information which is included in this report. It should be noted that GAO requested AID's comments on August 19, 1971, and the comments were not sent to GAO until January 7, 1972. Although this delay can be attributed to the crisis in South Asia during that time, it also accounts for the availability of later data to AID. GAO and AID used the same food grain production data which were compiled by GOI.

Detailed GAO views and AID comments are presented as appendix IV to the report.

MATTERS FOR CONSIDERATION BY THE CONGRESS

This report delineates U.S. efforts to assist agricultural development in India, one of the principal recipients of both U.S. economic and food assistance.

CHAPTER 1

INTRODUCTION

Prior to its independence in 1947, India was largely a country of self-sustaining villages in which traditional agriculture was not a business but a way of life. Most essentials were home produced, and outside needs were limited. India's leaders recognized that, using the traditional method of agriculture, India could not feed itself and responded with a program for improved production practices in agricultural districts, high-yielding varieties of crops, and incentive pricing to farmers.

The total land area of India is about 808 million acres, of which about 432 million acres are considered arable. About 367 million acres--many of them are marginal because the soil is dry, is easily eroded, and is not very fertile--are sown annually. Of the total planted, about 305 million acres are devoted to food grains.

External assistance has been provided by the Agency for International Development, the Ford and Rockefeller Foundations, international organizations, and several foreign countries. AID and its predecessor organizations have been providing technical assistance to India since January 1952. A substantial part of this help has been provided through contracts with United States land-grant colleges and universities.

Technical assistance currently is authorized under the Foreign Assistance Act of 1961, as amended, which directs that (1) emphasis be placed on programs of development of education and human resources in countries and areas in the earlier stages of economic development and (2) high-priority efforts be made to increase agricultural production where expanding populations or diet deficiencies cause the demand to exceed the rate of food production.

AID has increased agricultural technical assistance from $1.3 million in fiscal year 1966 to $5.4 million in fiscal year 1971. Agricultural technical assistance during this period was $21.9 million--about 40 percent of AID's

total technical assistance effort to India. The relationship of this program to AID's total effort in India is shown in appendix II. A total of 82 U.S. technicians were working in India as of December 1971 and were assigned to agricultural assistance.

We reviewed five of the six active projects relating directly to agriculture. We did not review the production incentives project because there was only one technician assigned and the Mission has decided to phase it out at the end of his tour. Pertinent data on projects reviewed follows.

Projects (note a)	Total AID dollar obligations (millions)	Participants (note b)		Technicians presently on board	Consultants	
		Number	Man-months of training		Number	Man-months
	(as of December 31, 1971)					
1	$19.7	440	8,773	30	155	544
2	5.6	83	565	19	25	75
3	4.0	171	1,100	17	14	33
4	3.3	158	721	10	48	48
5	.6	21	215	5[c]	11	13
Total	$33.2	873	11,374	81	253	713

[a]1. Agricultural Universities Development.
2. Agricultural Production Promotion (extension and research).
3. Soil and Water Management.
4. Agricultural Inputs (seed, fertilizer, pesticides, and other inputs).
5. Rice Research Improvement.

[b]Selected Indians are sent to the United States and other countries for training in agriculture--teaching, administration, or technical.

[c]A team leader provided by the Rockefeller Foundation.

Note: Compiled from AID records and information furnished by AID officials.

CHAPTER 2

AID-INDIA OBJECTIVES COMPARED

India's primary objectives for agricultural development are to (1) provide the conditions necessary for a sustained annual increase of about 5 percent in food grain production and (2) increase the participation of, and benefits received by, the small farmer, the farmer in dry areas, and the agricultural laborer.

To attain these broad objectives, India included certain goals in its fourth plan for the 5-year period ending March 31, 1974. These goals are shown below, along with AID's strategy and projects, which are shown in parenthesis, to help meet each goal.

1. Several programs for improving agricultural education will be implemented; six new universities will be established; and existing ones will be strengthened.

   (Develop the administrative organization of the agricultural universities so that they have a large degree of autonomy for directing professional and supporting functions dealing with teaching, research, and extension education. Project: University development.)

2. Agricultural research will be made the responsibility of the agricultural universities.

   (Integrate State research programs with those university programs directed toward solving problems impeding agricultural production. Project: University development.)

3. Coordinated research projects for solving specific problems will be emphasized.

   (Accelerate and improve rice research by strengthening the operational aspects of the All-India Coordinated Rice Improvement Project. Project: Rice research.)

4. Farmer education through a better extension program will be improved.

   (Develop cooperative state-university extension education programs. Project: University development.)

5. Farmers will be educated through a program of national demonstrations concerning the package of practices program.[1]

   (Develop demonstration and training programs necessary to acquaint agricultural workers with the package of practices technologies to ensure their understanding and acceptance of the concepts and the ultimate implementation by farm families. Project: Production promotion.)

6. Availability and quality of agricultural inputs, such as seeds, fertilizers, and pesticides, will be improved.

   (Increase the use of improved seeds, fertilizers, pesticides, and farm machinery/equipment by working with the governmental agencies responsible for promoting their use. Project: Inputs.)

7. Soil-testing facilities will be improved and extended.

   (Improve coordination between the various departments, agencies, and ministries concerned with soil and water problems and development programs. Project: Soil and water.)

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[1]The package of practices program was begun in 1960 as a cooperative effort of AID and the Ford Foundation. The package included use of an adequate supply of fertilizers, pesticides, and other agricultural inputs which would limit production if in short supply and the use of the new varieties of available seeds.

8. Pilot projects demonstrating techniques in soil and water management will be set up to evolve an economically feasible methodology of reclamation.

(Establish regional pilot projects for soil and water management. Project: Soil and water.)

AID's effort is only a small part of the total effort being expended by India, by international organizations, and by members of the aid-to-India consortium.[1] AID's expenditures for technical assistance in agriculture were $5.4 million for the fiscal year 1971, whereas India's annual expenditure was $610 million for agricultural programs.

CONCLUSIONS

AID's project objectives are to assist India in meeting its fourth plan goals. In view of the limited assistance provided by AID, in relation to total expenditures on agricultural programs in India, the accomplishment of the goals is almost entirely dependent on the efforts of the Indians themselves. The relationship between AID's project objectives and AID technicians' activities is shown only by the similarity of the areas in which the work is being performed. Therefore it is our opinion that reaching these goals, or failing to do so, is not a reasonable criterion for measuring the success of AID's efforts.

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[1] The aid-to-India consortium is a group of nations joined together to assist in developing the economy of India.

CHAPTER 3

PROGRESS IN AGRICULTURAL DEVELOPMENT

India is making progress in agricultural development, as evidenced by most growth indicators. Food grain production, which often changes greatly from year to year, has increased since 1950 at an average annual rate of about 3.3 percent. On a per capita basis, the average annual rate of increase has been about 1 percent during this time. Increases in production in 1970 and 1971 are more encouraging, as follows:

	Rate of increase	
	Gross	Per capita
1970	5.8	3.3
1971	8.4	5.7
1972 (est.)	3.0	.7

Land devoted to food grain production increased from 285.6 million acres to 305.3 million acres in the 10-year period ended March 31, 1970. Rice and wheat are the crops being sown on most of the additional acreage. The acreage increase in 1971 was negligible but areas under high-yielding varieties were about 25 percent greater in 1971 than in 1970. Most dramatic during the 10-year period was the 42-percent increase in yield per acre of wheat from 759 pounds per acre to 1,078 pounds per acre.

Although India has progressed in agricultural development, several problems have prevented even greater progress. These include:

--Size of farms--77 percent have fewer than 7-1/2 acres. Because the prospects for profit are slim on these farms, banks are unwilling to advance credit. Therefore these farmers cannot take advantage of the

benefits from the use of fertilizers, high-yielding seeds or pesticides, and farm machinery and equipment.[1]

--Dependence upon monsoon rains--India normally has a poor rain every third year and an exceptionally poor one every 25th year.

--Cultural practices that permit unproductive cattle to overgraze land that could grow crops or support an animal industry that produces meat, fibers, or milk.

The extent of India's progress in agricultural development is shown by the tables and graphs included on pages 14 to 16. Analysis of these data indicates that:

--India has a good chance of meeting its goals for (1) land under food grain cultivation, (2) areas sown with high-yielding varieties of grains, (3) land irrigated, and (4) use of pesticides.

--Production for 1969 to 1970 was 99.5 million tons, or about 1.5 million tons below the target. Production for 1970 to 1971 was 107.8 million tons, or about 1.8 million tons over the target of 106 million tons.

--The estimated production goal of 129 million tons for the year 1974 appears unlikely to be attained. AID officials have stated that, unless there are technological breakthroughs in food grains, especially

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[1]In commenting on a draft of this report, AID has stated that farms under 7-1/2 acres are not necessarily uneconomical; that many scholars agree that, given access to credit, small farms in India are more efficient because they get more labor and care; and that it is erroneous to infer that small farmers have been unable to obtain credit or take advantage of the benefits of fertilizers, high-yielding seeds, pesticides, and some farm equipment. These comments are presented more fully on p. 50 , app. III. Our evaluation of them is on p. 59 , app. IV.

in rice,[1] the goal probably will not be reached but that, if the 5-percent annual growth rate is maintained, it will be closely approached.

The increasing population in India, placed at 547 million by India's April 1971 provisional census figures, could perhaps be the most formidable obstacle to attaining the goal of food grain self-sufficiency. According to Government of India census figures, India experienced a population growth rate of 21.6 percent during the 10-year period ended March 1961, or an annual average rate of 2 percent. The rate for the 10-year period ended March 1971 was 24.6 percent, or a compound annual average rate of 2.2 percent a year. India's current goal is to reduce its annual rate of population increase to 1.5 percent as soon as possible, but it appears that it will be most difficult for this goal to be attained before 1980 at the earliest.

AID, in accordance with title XI of the Foreign Assistance Act of 1961, has prepared a report on food production and population growth in less developed countries. This report, dated June 1971, indicated that annual increases in food production in most of the developing countries could barely keep pace with the population growth.

The report shows that, even with recent food grain production increases in India, the average Indian's food consumption is still very low and that considerable effort in agricultural development and in population control will be needed to avert serious problems of malnutrition.

CONCLUSION

Despite substantial problems India is increasing its food grain production but probably not fast enough to meet its goal of 129 million tons for the year 1974. The view expressed by AID officials that accomplishment of GOI's

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[1] In commenting on a draft of this report, AID stated that a technological breakthrough in rice production was a good possibility as a result of the successful introduction of new strains.

primary goal of food grain self-sufficiency appears unlikely to be attained unless further technological breakthroughs, particularly in rice, occur seems reasonable. Such breakthroughs also require extensive effort to gain farmer acceptance and use of improved seeds. These efforts may result in only temporary self-sufficiency in food production unless the rate of population growth is slowed.

Food Grain Production

Type of grain	Harvested acres 1961	Harvested acres 1970	1961 production Tons	1961 production Pounds per acre	1961 production Pounds per person	1970 production Tons	1970 production Pounds per acre	1970 production Percent of change per acre	1970 production Pounds per person	Percent of change per capita
	(millions)		(millions)			(millions)				
Rice	84.3	93.1	34.6	904	172	40.4	957	6	164	-5
Pulses	58.2	54.4	12.7	481	64	11.7	474	-1	48	-25
Sorghum	45.5	46.0	9.8	475	49	9.7	466	-2	39	-19
Wheat	32.0	41.1	11.0	759	55	20.1	1,078	42	82	49
Millet	28.3	30.8	3.3	255	16	5.3	380	49	22	31
Corn	10.9	14.5	4.1	826	20	5.7	863	4	23	14
Other	26.4	25.4	6.5	548	32	6.6	569	4	26	-17
Total	285.6	305.3	82.0	633	408	99.5	717	13	404	-1
Wheat	31.9	41.1	11.0	759	55	20.1	1,078	42	82	49
All other	253.7	264.2	71.0	616	353	79.4	661	7	322	-1

Note: Year denotes 12-month period ended March 31.

In commenting on a draft of this report, AID stated that the use of 1961 as a base production year to compare 1970 production gave a skewed result since per capita food grain production for 1961 was the highest since at least 1949 and was not exceeded until the 1971 production year. (See p. 52 app. III).

We believe that overall changes in per capita food grain production are shown best in the charts on pages 15 and 16 which are, of course, included for that purpose. The chart on page 15 shows annual production; on page 16, the same data are charted using 5-year moving averages. We believe that the use of two good production years, about 10 years apart, is valid to compare relative changes in the production of the various food grains in terms of acreage under harvest, production per acre, and production per capita.

GOI Agricultural Goals for Fourth 5-year Plan

Item	Unit of measure	Base year	Quantity for base year	1969 to 1970 actual	Government goals by March 31, 1974
Total food grain production	Millions of tons per year	1960-61	82.0	99.5	129.0
Per capita production	Pounds per person	1960-61	408	404	472[a]
Land under cultivation	Millions of acres	1955-56	319	367	370
Land under food grain cultivation	do.	1960-61	285.6	305.3	308
Area sown with high-yielding varieties of grains	do.	1968-69	9.2	12.0	25.0
Land irrigated	do.	1960-61	68.9	93.7	100.0
Private tube wells	Thousands of well	1965-66	113	350	(b)
Pesticides	Millions of acres	1965-66	5.9	118.6	197.0
Fertilizer consumption	Thousands of tons per year	1964-65	781	1,934	5,500
Agricultural education:					
Colleges	One unit	1959-60	40	73[c]	80 or more
Admissions	Thousands of students per year	1959-60	4.6	8.6[c]	(b)
Graduates	do.	1959-60	2.1	4.7[d]	(b)

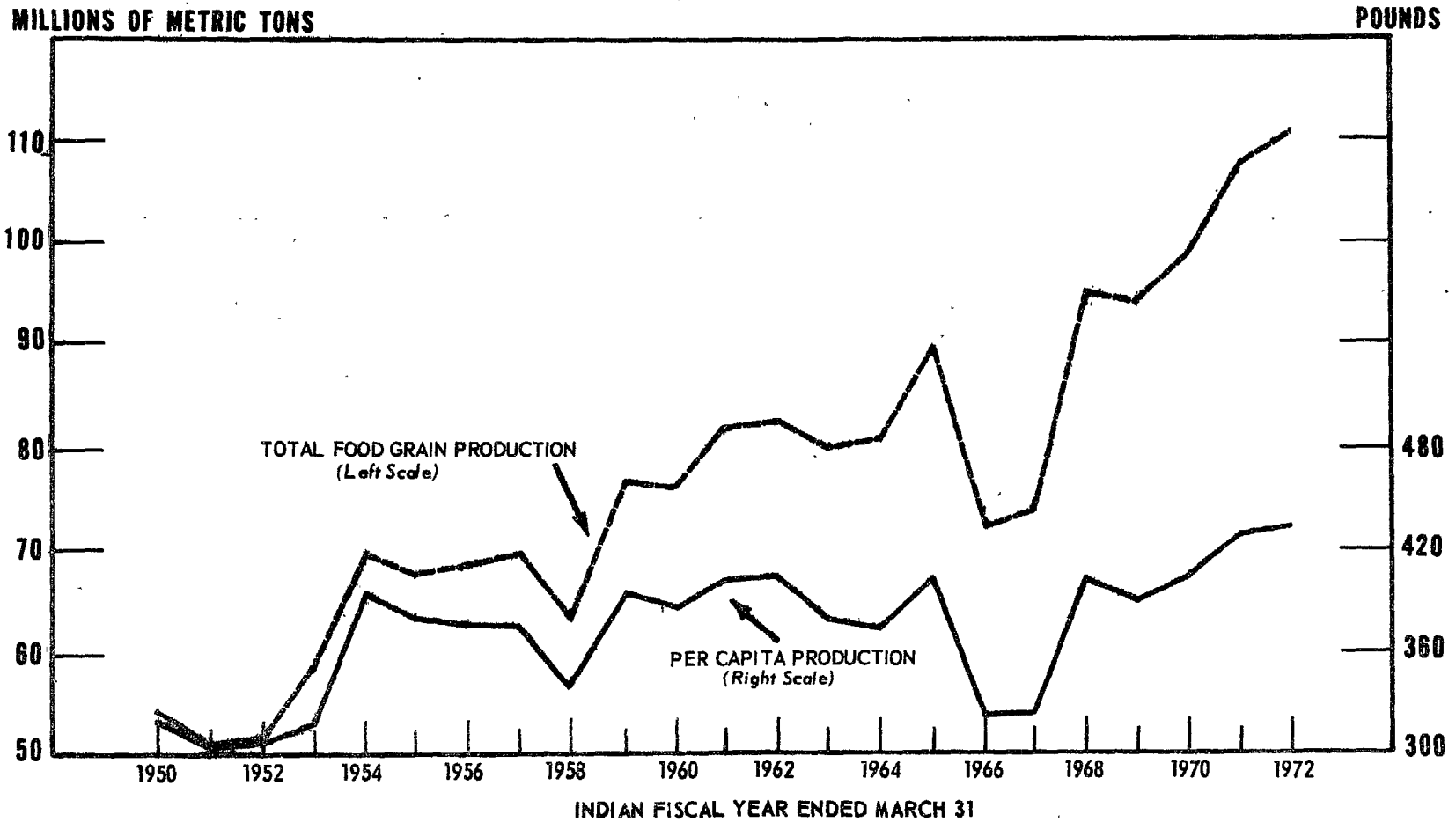
[a] This figure was based on GOI estimates of 606 million people by 1974.

[b] Not available.

[c] 1968-69 figures--latest available.

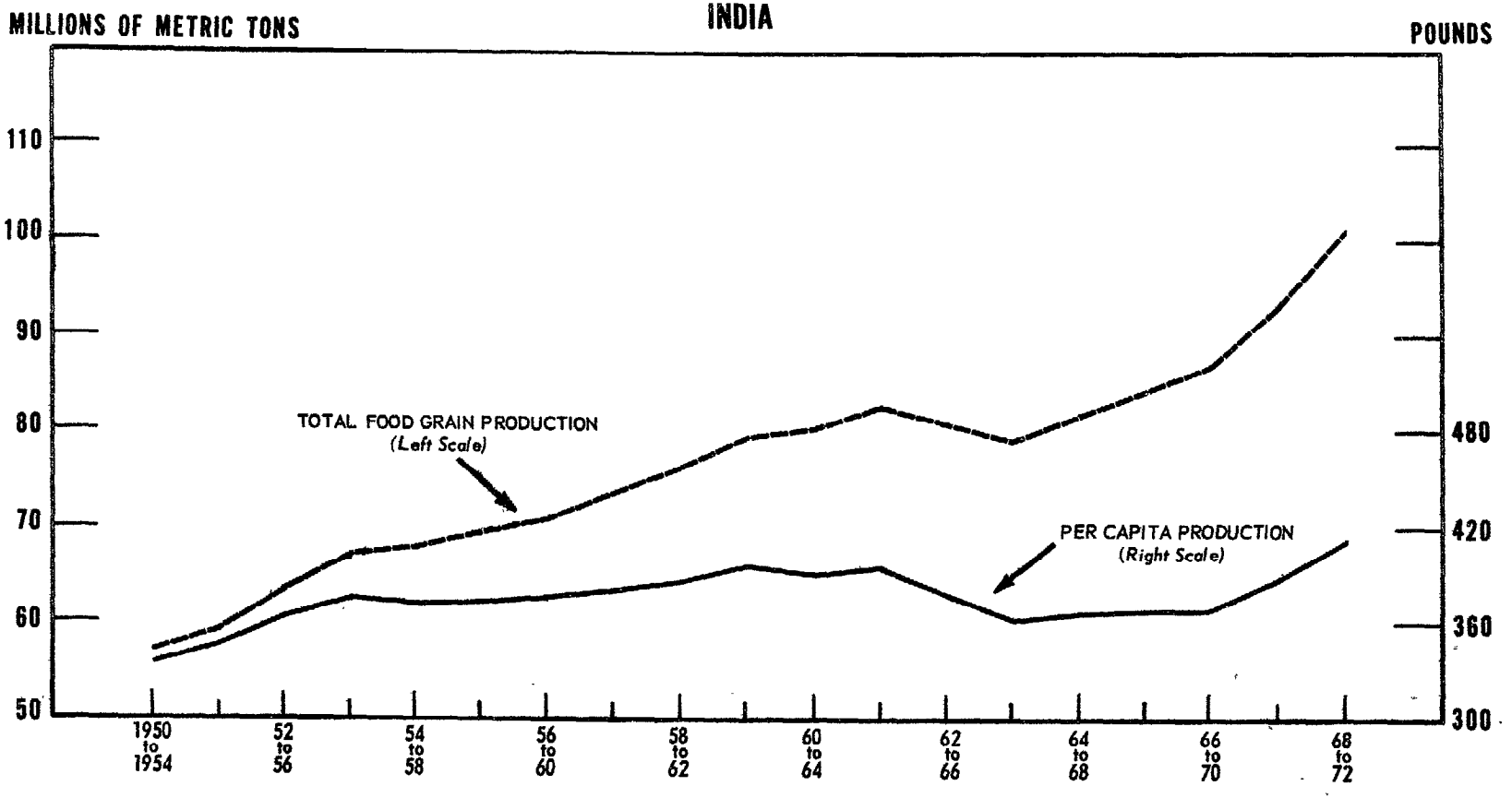
[d] 1966-67 figures--latest available.

ANNUAL PRODUCTION—INDIA



ACTUAL EXCEPT FOR 1972 WHICH IS ESTIMATED
CHART PREPARED BY GAO ON THE BASIS OF OFFICAL STATISTICS OF GOI.

FIVE YEAR MOVING AVERAGES
INDIA



FIVE YEAR MOVING AVERAGES
INDIAN FISCAL YEAR ENDED MARCH 31

ACTUAL EXCEPT FOR 1972 WHICH IS ESTIMATED
CHART PREPARED BY GAO ON THE BASIS OF OFFICIAL STATISTICS OF GOI.

CHAPTER 4

AID TECHNICAL ASSISTANCE PROJECTS

Technical assistance projects in India are directed toward development of Indian institutions for research and extension to make them responsive to problems arising from the introduction of new technologies. The AID technicians working in India, in our opinion, are qualified and are interested in helping India. Obviously a few technicians cannot do all that must be done to achieve continued agricultural gains in India, but having technicians in strategic positions may produce the far-reaching results needed to make these gains.

The technicians' effectiveness is limited by factors mostly beyond their control. Indians themselves must resolve problems stemming from these factors, and U.S. assistance must adjust to them. These factors include Indian economic and cultural conditions, regional loyalties which limit interstate cooperation, inadequate extension services, and insufficient operating and construction funds. Also these factors, in various combinations, affect all the projects we reviewed, and neither we nor the technicians can offer any ready or easy answers for avoiding or correcting them. In addition, the technicians have been hampered by problems on which AID can take corrective action.

The types of work in which the technicians are involved and some problems which have limited their effectiveness are discussed throughout the report.

WORK PERFORMED BY U.S. TECHNICIANS

Most of the agricultural assistance has been channeled through five projects, which are discussed in detail below.

University development

AID is providing technical assistance to eight Indian agricultural universities through contracts with six U.S. universities. The U.S. universities are: Kansas State, Illinois State, University of Tennessee, University of Missouri, Pennsylvania State, and Ohio State. The objective

is to assist India in developing agricultural universities which can plan and administer fully integrated statewide programs in agricultural education, research, and extension.

The work of U.S. technicians relates to the universities' education, research, and extension efforts. Examples of their work follow.

--Designed and helped set up a grasslands project to demonstrate how better farm management would increase the availability of grass for grazing.

--Helped set up a laboratory for improving the taste and cooking characteristics of the new high-yielding variety wheat.

--Persuaded a university to set up a graduate course that prepares graduates for practical careers in farm-related industries.

--Assisted in designing an agricultural-engineering building with facilities for training students to operate a meat-packing plant.

--Established a youth program similar to the U.S. 4-H Club for encouraging children of farmers to participate directly in agricultural projects.

--Set up a small extension education project to show the benefits of growing high-yielding variety maize.

Coordination of research and extension

The Agricultural Production Promotion Project has two broad aims: (1) solve field agricultural problems reducing yields of new, high-yielding food grains and (2) improve coordination between agricultural institutions. The idea is to institutionalize the concept that (1) research be focused on practical problems, (2) research workers have a responsibility to go into the field to discover problems, and (3) research and extension be closely linked.

The project is expected to pay both short- and long-term dividends. Successful efforts by the team in solving

technical field problems are expected to yield significant production benefits in the short term. Successful efforts in selling the concept of practical research linked to extension are expected to provide the basis for continued production gains in the long term.

AID contracted with four U.S. universities and the U.S. Department of Agriculture to furnish technicians to seven Indian States. Each technician and two Indian counterparts--one from the State's agricultural university or research facility and one from the State's agricultural department--constitute a field problem unit which concentrates on such areas as irrigation, plant diseases, and soil fertility.

Examples of specific technician activities follow.

--Helped the agricultural university set up a research program to solve the problem of a zinc deficiency in maize.

--Helped determine needs for farm implements and was designing bullock-drawn machines to meet these needs.

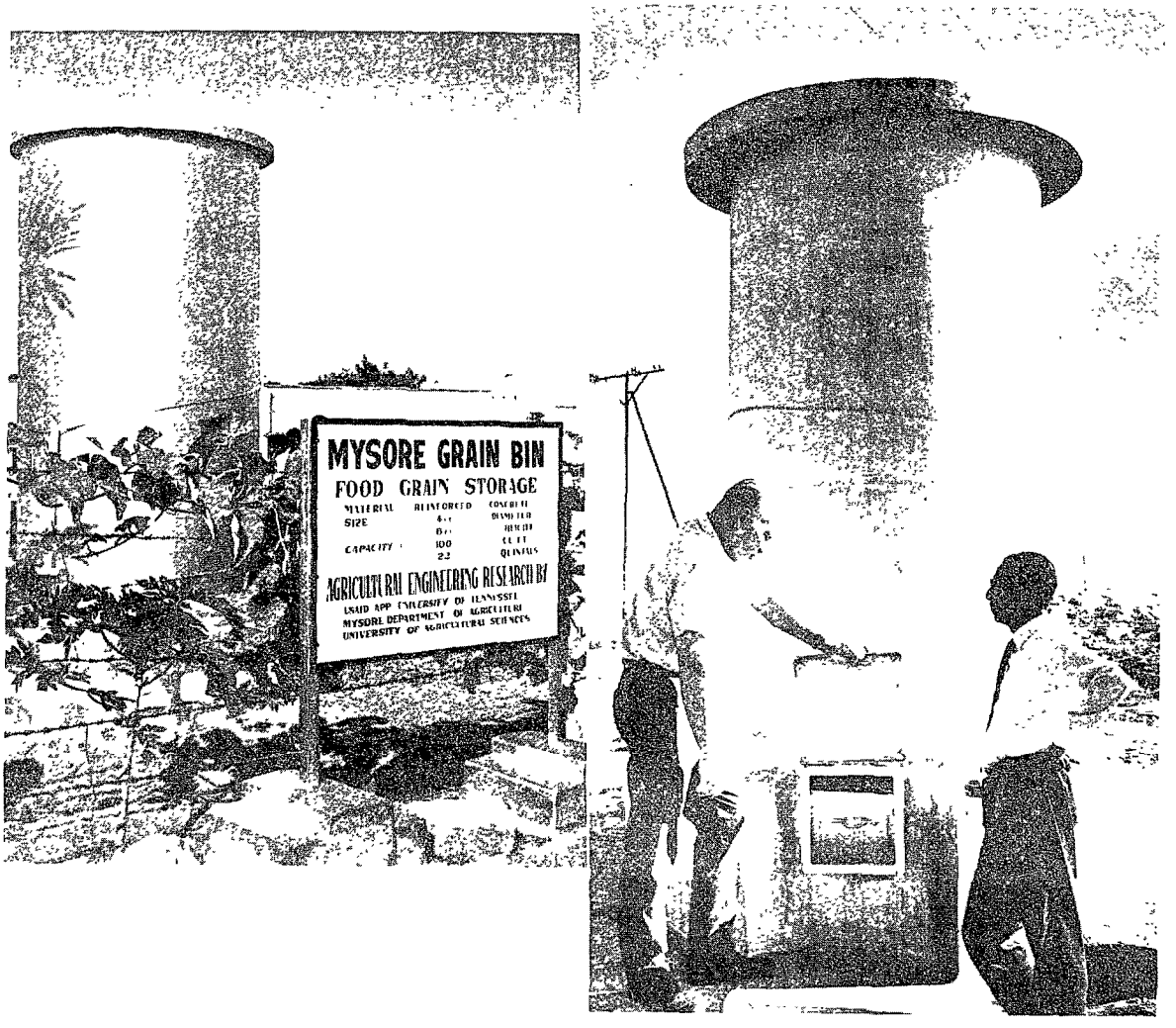
--Designed and was helping install pilot projects to demonstrate improved methods of irrigation.

--Assisted in making State-wide soil surveys to determine the types of fertilizer needed.

--Developed and helped set up demonstration projects for providing all the needed inputs to small farmers at a nominal rate.

--Helped set up wheat research projects to determine the effects of soil salinity, fertilizer applications, and planting dates.

--Helped determine the best pesticide to control the shoot fly that attacks the sorghum crop.



The agricultural engineer on the agricultural production promotion team in Mysore designed these grain storage bins for use by farmers in that State. They were built by the Mysore Agricultural University.

Photos furnished by AID.

Soil and Water Management project

This project is designed to help India resolve the problems impeding the full use of soil and water resources. The project consists of four units or teams--one in New Delhi and three at regional pilot projects in Uttar Pradesh, Punjab, and Mysore. A summary of progress and problems identified by the Area Auditor General (South Asia) in a report issued March 17, 1971, is included as appendix I.

The State governments are responsible for operating the pilot projects and receive financial and technical assistance from GOI and from AID. AID is supplying to each regional project an agronomist, an entomologist, an irrigation specialist, and an agricultural engineer through a participating agency service agreement with the U.S. Soil Conservation Service, Department of Agriculture. These technicians collaborate with counterpart Indian technicians in their respective scientific areas. Also AID supplies a team leader who oversees the team's field operations and works with the State agencies concerned with soil and water management.

AID technicians, in our opinion, have played a central and vital role in the projects by providing the major scientific know-how and leadership. Some examples of project activities involving AID technicians follow.

--Getting India to accept the soil classification system of the U.S. Department of Agriculture.

--Designing and building of a scraper for leveling sand dunes.

--Leveling and irrigating once unproductive sand dunes so that they now produce a wheat crop.

--Introducing a new irrigation method.

--Establishing a 371-acre cooperative water distribution scheme.

--Constructing a 2-mile-long drain to drain 800 acres which can now produce two crops a year.

--Installing a concrete-lined irrigation ditch increasing irrigation capacity from 14 to 100 acres.

--Developing detailed, scientific soil and water use plans for a model demonstration farm.

Seeds, fertilizers, pesticides, and other inputs

The Agricultural Inputs project consists of five small subprojects under one AID project manager. The technicians are working with the National Seeds Corporation (a Government entity); Indian officials; and the private sector to provide assistance on fertilizers, seeds, plant protection, and machinery.

Some examples of specific activities are:

--Designed a seed cleaner and helped the corporation engineers and a private manufacturer build a prototype.

--Presented recommendations for more effective use of corporation seed production facilities.

--Lectured in a corporation training course for its employees and for representatives from State governments and the private sector.

--Prepared a seed processing guidebook.

--Drafted and presented to the Ministry of Food and Agriculture, through the corporation, minimum seed certification standards.

--Developed a uniform tag for all certified seeds in India.

--Recommended and demonstrated that the use of stronger polyethylene bags would increase the storability of seeds.

--Prepared a handbook for seed marketing.

--Prepared management graphs showing production and sales of foundation and certified seeds by the corporation since its inception.

--Demonstrated the benefits of quality machines for seed processing.

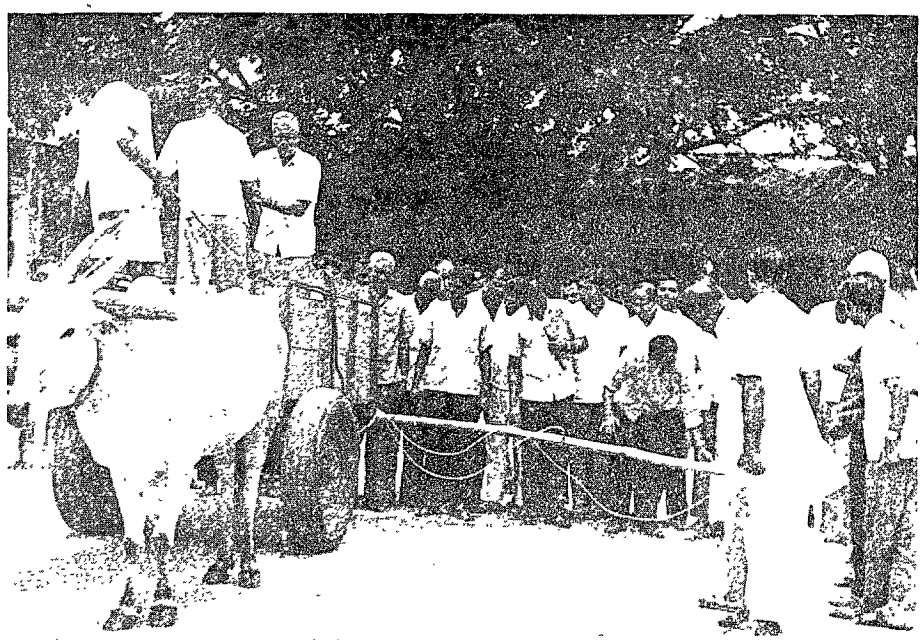


Photo was furnished by AID.

This sprayer was developed by a pesticides advisor and his counterpart.

Rice research

The All-India Coordinated Rice Improvement project was initiated in fiscal 1966 and was sanctioned in 1968 for 5 years by GOI. Under the direction of the Indian Council of Agricultural Research, project activities include coordinating, stimulating, and encouraging the development of comparable research data from about 70 rice research stations run by state governments, state universities, and the Indian Council of Agricultural Research.

AID's objectives are to (1) accelerate rice research in India by strengthening the All-India Coordinated Rice Improvement project and (2) improve the research capabilities of rice research employees so that promising rice varieties and improved agricultural practices are made rapidly available to farmers.

AID technicians are stationed at project headquarters and thus they have the opportunity to contribute to nearly all organized rice research in India.

Activities of the technicians include:

--Backstopping of scientific research employees throughout the country.

--Monitoring research progress and checking validity of data submitted by research stations.

--Organizing and leading training seminars held at the project headquarters.

--Attending the International Rice Research Institute annual conference to submit research results for prior year.

--Determining the best methods of growing new varieties.

--Identifying varieties having resistance to diseases.

PROBLEMS LIMITING TECHNICIANS' EFFECTIVENESS

Although AID technicians are qualified and are interested in helping India, they have experienced problems. Some of these problems are discussed in detail below.

Indian reluctance to accept advice on university development and policy matters

Although Mission officials believe that most Indian agricultural universities still can profit from U.S. advice on major development and administration policies, Indian officials are becoming increasingly reluctant to accept U.S. ideas in these areas. This reluctance can be traced to India's desire for independence in these matters and also to the relatively lower rank of U.S. technicians dispatched to offer this high-level advice.

Because GOI does not recognize a position of advisor to the vice chancellor,[1] the chiefs of the U.S. teams are assigned to lower echelon positions, such as advisor to the research director. This lack of recognition impedes the efforts of the chiefs, as leaders of the U.S. teams, to develop close working relationships with the vice chancellors.

Other impediments also hamper the teams' effectiveness. For one thing the vice chancellors, almost without exception, are senior, experienced officials; it is distasteful to have someone assigned to tell them how to run their university. This advice can be particularly hard to accept when it is proffered by someone without an impressive background in university administration. Unfortunately this is too often the case. Of the eight current chiefs of party, only one has formal training in university administration and only one is a former university president.

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[1]The titular head of a university is the chancellor, who is usually the State governor or another high State official. The chief executive and finance officer is the vice chancellor.

The following comments of team chiefs illustrate some of the problems.

--The team leader has never been asked for advice, nor has he even been invited to university organization or administrative meetings. He feels that the team's acceptance has been only superficial; leaders have not been viewed as someone to ask for advice. In this environment it has not been easy to contribute meaningfully to the university's growth. Adding to the team's problems at the university level is the attitude of a GOI official who is on the governing board of all Indian agricultural universities and who often sits in on university council meetings. At one meeting the vice chancellor introduced a list of changes (drawn up by the U.S. team) which the U.S. technicians considered crucial to the university's development.

These changes included the need for the university to:

1. Take over the State's agricultural research.

2. Include professors on its payroll, not the State's.

3. Receive blanket budget grants without the State's specifying how each rupee was to be spent.

4. Develop a 5-year plan.

A GOI official protested that the U.S. technicians had no business recommending these broad policy changes. Although most of the recommendations eventually were carried out, they were undoubtedly slowed down by the official's attitude because the GOI organization of which he was a member partially funded the university and was the organization through which the Mission channeled aid to the universities.

--The team leader does participate in council meetings at which university operational policies are set. This participation may be hollow, however, in the light of the vice chancellor's opinion that the university no longer needs help in general areas but, rather, needs specialists only in the new, developing colleges and departments.

--The team leader is not experienced in university organization or administration and therefore cannot advise in these areas. He has very limited contact with the vice chancellor.

--The team leader has very few discussions with the vice chancellor about university development. The vice chancellor previously held a very important job in the Central Government and believes that he is fully capable of running his university without foreign advice.

The Mission is aware of these problems. In April 1970 the Mission Director commented:

> "It is obvious that we are not succeeding generally in our present arrangement in which we expect the chiefs of party to have a major influence on organization and administration at top levels in the university."

The Mission has suggested to GOI that a panel of top Indian experts on university organization and administration be established to counsel the universities on particularly vexing problems. The Mission would enter the picture by recruiting a few highly qualified U.S. technicians to work with the panel on a full-time or part-time basis. At the time of our review, such a panel had not been established.

Initial delay in resolving work to be performed

Technicians on all the projects stated that planning problems delayed and/or limited their accomplishments. Comments of the various team leaders were:

--A basic assumption made by AID in planning one of the projects was that the Indian States had an effective extension service. When the technicians began to work with the universities and State departments of agriculture, however, it became evident that "extension" to the Indian meant just the supply and distribution of agricultural inputs, such as seeds, fertilizers, and pesticides. The education aspect of an

extension service, working with farmers and passing on to them the results of agricultural research, was, for the most part, underdeveloped. Extension agents were not adequately trained, visited farmers on a very limited basis, and had nonagricultural duties.

--Before the project goals could be accomplished, the technicians had to convince the States of the inadequacy of the extension service and of the necessity for developing a service which would deliver to farmers the latest available research information and application techniques.

--The objectives were hazy, and each team member had to work out a plan of action for his particular work area.

--The objectives are to identify agricultural production problems, to plan a program of research, and to disseminate research findings to cultivators. Accomplishment of these objectives was delayed because the research organization had not been set up and the Indian institutions responsible for research and extension were not sure why the U.S. team was there. The Indian Department of Agriculture assumed, for a number of months, that the U.S. team was there to help only the agricultural university. It did not realize that the primary purpose of the team was to act as a catalyst for getting the two organizations to work together to solve the problems limiting agricultural production.

--Elementary work segments of the Soil and Water Management pilot projects could have been completed or at least started by the Indian technicians before the AID technicians arrived, but not always. For example, one State had employees capable of preparing a soil survey for the pilot project area, but the survey had not been started and Indian technicians having these skills had not been assigned to the project.

--AID technicians had to train a soil survey technician and then complete the survey, which delayed the project for 6 months. Although the States were to provide

office space, one team leader had to work out of his home for about 4 months until he got an office. Another team had been assigned to the project for 17 months before the project budget was announced. This lack of a definite budget inhibited the team's progress because several demonstration ideas had to be held in abeyance until the budget was known.

--The objective of one project was to assist the National Seed Corporation in improving seed production, processing, and marketing. But work plans had not been completed, and the first 9 to 12 months--or nearly 3 man-years--were lost resolving with Indian officials the jobs that AID technicians would perform.

Funding problems

Indian Central and State Governments did not always follow through with their allocations for operating and construction funds. We noted that:

--Construction of dairy facilities, recommended by the U.S. technicians to demonstrate improved methods for milk processing, had been delayed because of funding problems.

--Construction of a science building, approved in 1967, was delayed until 1970; this delay substantially set back the U.S. advisor's progress.

--The rice improvement project was continuously short of land, buildings, and laboratory equipment from its inception. Permanent buildings for offices, laboratories, and greenhouses were to have been constructed by the end of 1967, but as of January 1971 the project still was located in five scattered buildings, most of which were loaned by the Andhra Pradesh University. The lack of land had particularly hindered the breeding program which had been limited to 35 acres but which could have used many more. The physiology and pathology departments were impaired by a lack of laboratory equipment. GOI was to have supplied $127,000 worth of AID equipment, but as of December 1970 it had not been delivered. The problem was alleviated somewhat by the transfer of equipment from another AID-financed project.

--The Finance Ministry took the position that one of the Soil and Water Management pilot projects was overfunded and slashed its funds so sharply that about half of the Indian employees lost their jobs. Funds for another project were cut off completely, and at one point the project employees were without paychecks for 4 months. A third project received only half of the money considered necessary by project employees to meet project goals.

--Funds allocated in the fourth plan for construction of a new campus were slashed after construction was less than 50 percent completed.

--The agricultural universities were experiencing difficulty in hiring qualified people because of imposed State policies that set low, rigid salary scales. At one university 85 positions out of 335 were vacant because the university could not hire enough qualified men due to salary restrictions.

Problems with counterparts

An Indian technician is assigned as a counterpart to each U.S. technician. The working relationship between the U.S. technicians and these counterparts varies from project to project. Some U.S. technicians are, in effect, teachers or trainers, and others are partners, working with the Indian technicians on an equal footing. The relationship depends on the skills and background of both U.S. and Indian technicians and on whether Indian technicians are assigned full time or part time. Some problems with Indian counterparts identified by AID and the project technicians are:

--Counterparts are constantly shifted because of State civil service policies. Advancement under the Indian civil service programs frequently requires officials to change specialties, e.g., from a soil and water specialist to a veterinary specialist. As a result some U.S. technicians have had to work with counterparts possessing skills other than those required on the project.

--Some Indians worked only part time with the U.S. technicians because of other duties.

--Counterparts are unwilling to travel because of low per diem rates. Whenever a counterpart traveled for any extended length of time, he had to pay some of the costs out of his own pocket. Also they are restricted to ground transportation.

--In some cases location of counterparts is such that U.S. technicians can meet with them only once or twice a year.

Other problems

After 15 years of U.S. assistance, the State of Punjab was divided and in the process the Punjab University also was split. The two new States are now developing universities from the two campuses of the former university. Since each campus had different colleges that made up the university, the split required each new university to establish the missing colleges on each campus. For example, one campus had the agricultural engineering college and the other had the veterinary college, and, when the university was split, each university had to establish the missing colleges to make complete universities. The chief of party commented that one university would have been sufficient (since the two are now only 150 miles apart), but State politics precluded cooperation between the States in the use of one strong, already developed university.

The Area Auditor General (South Asia), in a report on AID technical assistance to a state agricultural university, identified the following problems.

1. Creating a second agricultural university restricts the scope and effectiveness of AID's assistance since such assistance is limited to one of the universities. Establishing a second university also is expected to dilute the State's manpower and financial resources and creates a potential problem area in interuniversity coordination in determining academic, research, and extension policy.

2. Key professional positions essential for planning, directing, and implementing programs are vacant, and most of the faculty positions have been only temporarily filled.

3. The chief of party attends the meetings of the Executive Council and the Academic Council, but his effectiveness has been limited because some of the meetings are conducted in the local language.

4. The university plans to hire only persons from that State and instruction to be in the local language.

Also the technicians have had problems in getting support from the Mission. One team leader said that the Mission issued vehicles which were old and undependable and that this impeded his team's progress by as much as 20 percent.

The Mission issued substandard coolers for the homes of the members of one team. These coolers, even when they worked, were ineffective and, during the hottest months, brought the temperature down to only the low 90's. Compounding this problem is the location of the project, which is 28 miles from the closest town and over 200 miles from the closest city.

Attributable, in part, to these problems was the fact that none of the technicians on the isolated pilot project were returning for another tour. The chief of party commented that this complete turnover would delay the project at least 6 months.

The U.S. universities were experiencing some problems in recruiting qualified technicians. Our review of 54 recruitments showed that the universities had taken over a year to get 25 of the technicians to India after GOI requested them. Most of the delay occurred because of the difficulty in finding someone to nominate for the position. An AID official stated that it was very difficult at times for the universities to find qualified persons willing to go to India.

To facilitate recruiting efforts of the U.S. universities, AID requested that the Indian organizations prepare 5-year plans outlining their technical assistance needs. At the time of our review, India had agreed to sign a firm commitment requesting technicians for a 2-year period and to study the merits of a 5-year plan outlining their needs for technicians.

Suggestions from technicians
for improving the program

U.S. technicians made the following comments on how AID's technical assistance could be improved. We agree with these suggestions.

--AID and Indian officials should define specifically the areas in which foreign assistance is needed, should establish specific goals and activity targets to be accomplished, should determine what will be needed to accomplish the goals, and should outline a plan of action before the technicians are recruited. The U.S. technicians believed that this joint planning would cut down on the amount of time required by the technicians to decide upon specific activities to undertake.

--When new projects are initiated, which parallel existing projects, greater efforts should be made by AID to pass on to the technicians in the new teams the experience gained from existing projects.

--Because of the lack of an effective extension program in India, AID should have at least one technician on each of the research and extension teams, who has a background in extension work. This would help bridge the gap between modern agricultural technology and farmers who lack such information.

--The U.S. technicians should take part in the selection of participants to be sent to the United States. This would better ensure the selection of the most qualified persons and of those that would have the greatest impact on Indian agriculture.

--Only the top managerial officials should be sent to the United States for participant training. All other Indian officials should be trained in India. It has been AID's experience that the training received by the latter group in the United States is applicable to conditions in the United States, not India, and, after they return, a period of adjustment is faced by the participants before they can be of

value. AID might provide assistance in establishing a training facility in India for employees in lower management positions.

--There should be some means of exchanging professors with U.S. universities. This exchange would give Indian professors a chance to observe and participate in a U.S. university program. The professors at the Indian universities would have the opportunity to observe and benefit from the techniques used by U.S. professors teaching courses at the Indian university.

--Critical evaluations made by Indian officials of technicians' activities would be beneficial to the technicians and to the Mission if improvements in the planning and application of U.S. assistance efforts were suggested. Also such evaluations may stimulate a more open and candid relationship between Indian and U.S. technicians.

--Efforts should be made by AID to encourage the selection and assignment of higher quality counterparts having influence to accomplish work and willingness to cooperate with U.S. technicians. Also efforts should be made to reduce the frequent shifting of counterparts.

--The Indian Government should step up its funding not only to the pilot project sites but also to programs for disseminating ideas developed at the sites.

--Each Indian State should organize an agency which would draw together all management functions and technical expertise for administering State-wide soil and water programs. The State should ensure that employees trained at the pilot projects are assigned to influential positions within this agency.

EVALUATION OF TECHNICIANS' EFFORTS

Each Mission project has a manager responsible for guiding, coordinating, monitoring, and evaluating the performance of the contractor that carries out the project.

The major evaluation report required of the project manager is the annual Project Appraisal Report which is designed to show how the contractor is meeting the project goals set forth in the Non-Capital Project Paper and in the contract. The appraisal report is jointly written by the project manager, the Mission program office, and the contractor. The contractor often contributes nearly all the information. Another evaluation report, the U-307 report, was instituted in 1968 and was designed to assess the managerial and technical aspects of the contractor's performance. Since these are also covered in the appraisal report, the U-307 report has lapsed into a mechanical, stereotyped document without any in-depth analysis.

Both the project paper and the contract discuss project goals only in general terms. The agricultural university development project paper states that, to be successful, the project must develop within each university an administrative organization capable of directing all functions of an institution dealing with agricultural teaching, research, and extension education at undergraduate and graduate levels.

Contracts between AID and the universities are even less explicit. These contracts require that the contractor advise and assist the governing body of the university and the vice chancellor to formulate and execute policies, plans, and programs with respect to the establishment, development, operation, and management of the university and its constituent parts. The project manager therefore must evaluate the contractor's performance, without benefit of specific criteria by which to measure the contractor's progress. This problem is further compounded by the fact that AID's goals are inextricably interwoven with Indian goals. The point to be considered is the size of the AID contributions compared with those of GOI and other donors.

CONCLUSIONS

In our opinion the U.S. technicians in India are qualified and are interested in helping India to increase agricultural production. The results of their efforts are mixed: some projects have been successful, others have not. Many of these technicians have been placed in positions in which they can contribute, and have contributed, toward achieving increases in agricultural productions. Their efforts are limited, however, by the problems outlined above and by cultural and economic conditions which can be resolved only by the Indians themselves.

We generally concur in the thoughts expressed by U.S. technicians that a need exists for AID and GOI to work together to define more specifically the work to be performed by technicians on their arrival in India. We also believe that it would be helpful if some arrangements were made for preparatory fieldwork and data gathering to be performed prior to arrival of the technicians. This would have the effect of expediting the technicians' work schedules.

The preliminary work, in some instances, has been performed by the AID staff, but we believe that lost time would be avoided if an agreement could be reached with GOI on the work needed to be done in preparation for arrival of the technicians. Although the services of a special consultant may be necessary in formulating such agreements, we believe that the effort would be valuable because it would allow the technicians to make better use of their time on the projects.

We believe also that some action is required on the part of AID and GOI to improve the working relationship of the Indian counterparts and AID technicians as well as to improve the logistical support for all project employees. In regard to improving logistical support, it may be appropriate to consider use of the large amount of U.S.-owned local currency for this purpose. We believe further that there is a need for AID to improve procedures for reviewing and evaluating the work of the technicians.

We submitted to the AID Administrator for his review and comment several proposed recommendations concerning the need for better definitions of AID project goals, improved Indian counterpart arrangements, logistical needs of U.S. technicians, and evaluation and review of technicians' efforts. These are now shown in AID's comments on pages 46 to 50, appendix III, along with AID's response to each.

We believe that AID's comments deal adequately with these proposed recommendations except in those instances in which it was proposed that AID enter into discussions with GOI officials. In December 1971 the United States suspended economic assistance to India worth over $80 million as a result of hostilities between India and Pakistan at that time. In view of the current uncertainty in respect to future U.S. assistance to India, we believe that it is inappropriate for us to recommend that such discussions be pursued at this time.

MATTERS FOR FUTURE CONSIDERATION BY THE AID ADMINISTRATOR

The AID Administrator should, at such future time as he deems conditions in India suitable, direct the U.S. AID Mission Director in India to seek discussions with GOI officials to:

--Secure the appointment of Indian counterparts who possess the skills necessary to assist in carrying out the project, who are receptive to working with AID technicians, and who understand the role of the U.S. technicians in the program.

--Eliminate or reduce the problem of the high turnover rate of Indian counterparts by obtaining authorization for longer tours of duty for personnel in these positions.

--Have dependable equipment and reasonable expenses furnished to the counterparts.

--Obtain evaluations from GOI officials of the U.S. technicians' work prior to the end of their tours of duty and seek suggestions from the Indian officials for strengthening the planning and application of AID's efforts.

Extract from Report of
Area Auditor General (South Asia)
Soil and Water Management
Summary of Progress Made and Problems
Issued March 17, 1971

1. National Research Program: Some progress was evidenced by implementation of certain of the recommendations which resulted from a review of the GOI research programs, but GOI procrastination has delayed the assignment of needed technicians.

2. Coordinate Soil and Water Work of GOI Ministries and Departments: Good progress has been made at the GOI level, although the Water Management Unit should be strengthened and given the recommended inter-agency status so that the desired effect can be more fully realized. Little has been accomplished at the state level, with most of the progress in this area coming within states where the Regional Pilot Projects are located.

3. Land Use and Soil Survey: Good progress had been reported, with existing deficiencies "basically unchanged." The problems are being given attention, but considerable time will be required for corrective actions to take effect at the field level.

4. Surface and Groundwater Study: Virtually nothing had been accomplished, because of delay by the GOI in taking action on recommendations resulting from studies made in fiscal years 1967 and 1969. Subsequent to the audit date, the GOI took tentative action on the latter report.

5. Inventory of Water and Land Resources: Work was delayed initially because of inadequate compilation of basic soil and water resource data by the GOI. Further delays to the development of the inventory program arose from the low priority given by the GOI, and its skepticism concerning the inventory techniques recommended. Considerable preliminary work had been done, and although in the nature of an exercise to test procedures, and actual soil and land resource inventory of approximately one million acres was completed in early 1970.

6. Erosion Control and Sedimentation: Nothing accomplished because of delay by the GOI in submitting requests for services of technicians.

7. Minor Irrigation: The arrival of the technician was delayed because of slowness of the GOI in requesting the services. Subsequently, the GOI failed to comply with a request to develop a work plan to guide the technician's work. The benefits from those services which are not to be continued after the technician's first tour were not ascertainable, from the data at hand.

8. Regional Pilot Projects for Soil and Water Management: Good progress was made by two of the three pilot projects. The start of the third was significantly delayed, but there had been some progress such as: the development of a work plan draft, the preparation of a general soils map of the project, the instigation of a training center program, and the initiation of two group demonstrations. There have been numerous difficulties and delays which have affected progress, such as: (a) more time than was anticipated in preparing work plans, (b) delays by the GOI in supplying funds, personnel, transportation and other facilities, (c) divided state authority for handling technical and administrative matters, and (d) State officials did not always consult AID technicians in planning and administrative matters.

U.S. EXPENDITURES FOR

TECHNICAL ASSISTANCE, COMMODITIES, AND

OTHER ASSISTANCE PROVIDED TO INDIA

FISCAL YEARS 1966-71

	1966	1967	1968	1969	1970	1971	Total
	(millions)						
TECHNICAL ASSISTANCE EXPENDITURES:							
Agriculture (note a)	$ 1.3	$ 2.1	$ 3.7	$ 4.3	$ 5.1	$ 5.4	$ 21.9
Other	6.5	7.4	5.6	4.0	4.8	3.9	32.2
Total	7.8	9.5	9.3	8.3	9.9	9.3	54.1
COMMODITY ASSISTANCE EXPENDITURES:							
Fertilizer	37.7	62.2	107.3	68.1	40.2	14.8	330.3
Other (note b)	207.6	188.1	191.1	141.2	160.9	219.3	1,108.2
Total	245.3	250.3	298.4	209.3	201.1	234.1	1,438.5
OTHER ASSISTANCE EXPENDITURES	36.3	23.2	15.3	33.3	34.5	11.1	153.7
Total all assistance expenditures	$289.4	$283.0	$323.0	$250.9	$245.5	$254.5	$1,646.3

[a]The relationship of technical assistance to agriculture to the total AID effort in India is shown in this table.

[b]Includes some agricultural commodities.

Note: Prepared by GAO from AID records.

APPENDIX III

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

JAN 7 1972

Mr. Oye V. Stovall
Director
International Division
U.S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Stovall:

I am forwarding herewith a memorandum dated January 7, 1972 from Mr. Donald G. MacDonald, Assistant Administrator for Near East and South Asia, which constitutes the comments of AID on the U.S. General Accounting Office's draft report titled, "Review of AID Technical Assistance to Support Indian Agricultural Development."

Sincerely yours,

Edward F. Tennant
Auditor General

Enclosure: a/s

GAO notes: GAO requested agency comments on a draft of this report on August 19, 1971. In view of these comments and the availability of later information, changes were made to the draft and are incorporated in this report. Agency comments no longer applicable have been deleted.

GAO views on these comments are included in appendix IV. The number in the margin on the following pages correspond to the related GAO views expressed in appendix IV.

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

ASSISTANT
ADMINISTRATOR

JAN 1972

MEMORANDUM FOR: Mr. Edward F. Tennant
Auditor General

SUBJECT: General Accounting Office Draft Report, "Review of AID Technical Assistance to Support Indian Agricultural Development"

We appreciate GAO's report on AID Technical Assistance to Indian Agriculture and are in agreement with most of the report's observations and recommendations on project problems. However, we differ with the recommendation on annual USAID Mission reviews of performance of each contract technician and with GAO's findings and conclusions with respect to: a) degree of participation of small farmers in improved agricultural technology (use of fertilizer pesticides, high yielding seeds), b) extent of progress made in agricultural development in India, particularly, in per capita foodgrain production, and c) some aspects [1] of the problems limiting effectiveness of contract technicians. These matters are discussed in the attached detailed comments.

As our documentation for individual projects (in Mission files, audit reports and project evaluation reports) indicates, AID is aware of the specific problem areas cited by GAO as needing improvement, and we have appreciated the opportunity of discussing these problems with GAO during the course of the review and following receipt of the draft report. Over the past three years significant progress has been made [2] in improving project management and during the past eighteen months AID's revised and improved system for evaluating project performance was introduced to field Missions. From AID's side, and in cooperation with the Government of India, we are continuing our efforts to strengthen these technical assistance projects in agriculture.

We think, however, that the principal impact of these projects will be made over the longer run as Indian agricultural institutions and technicians develop their own improved approaches to dealing with the major agricultural problems. An illustration of Indian development initiative based directly upon its technical assistance in agriculture is the quick Indian adaptation of the short-strawed red "miracle wheats" pioneered by the Rockefeller Foundation in Mexico. These red Mexican wheats were not suitable to the Indian consumers, particularly for making the unleavened bread known as "chapatties," a staple in the

Indian diet. Yet, within two growing seasons Indian agricultural technicians on their own initiative had through selection and breeding crossed the Mexican wheats with native varieties to produce the present Indian "miracle" amber wheats which have the same high yield characteristics with similar growth response to fertilizer and which also meet full consumer acceptance.

We believe the GAO report would be strengthened by giving greater recognition to the dramatic progress in Indian agricultural development [3] in recent years. The report, in our opinion, should point out that, while the Indian population has increased by more than 200 million over the past twenty years and about 135 million during the past ten years, the level of living has continued to improve. Foodgrain production has more than doubled in the twenty-year period and per capita production of total food and of foodgrains has shown important increases over both periods. In our judgment, these developments should be given balanced treatment in the report, as it is in this climate that India, on its own and through technical assistance provided by the U.S. Government and others, seeks to provide the basic food requirements of its large and increasing population. However, India has a long way to go before basic standards of nutritional intake for maintaining normal health can be achieved. Recurrence of severe drought could quickly and drastically change the prospects for continued progress, and, of course, the longer range prospects for food and nutritional self-sufficiency focus attention sharply on the urgent need for India to match its progress in agriculture with a reduction in its rate of population growth.

Of the various projects reviewed by GAO, we consider the Agricultural University Development Project, involving assistance to nine Indian [4] state agricultural universities through contracts with six American state universities, as one of the best examples of effective technical assistance. The rate of development of these Indian universities has, of course, varied; and, in fact, two of the institutions have lagged well behind the others. However, the overall impact of the project has been gratifying; and we believe GAO will fully agree that the project is achieving the objective of strengthening the institutional framework in Indian states to support the major emphasis of the Government of India on agricultural development to achieve food self-sufficiency.

All projects, even outstandingly successful ones, have implementation problems. AID tries through its own staff to identify these problems and take action to resolve them as early as possible in the life of a project. However, we ought not to confuse the presence of implementation problems in the agriculture projects in India with their

overall success. Taking a balanced look at progress and problems in the agriculture sector projects, the overall record has been very good. The universities and state agriculture and irrigation departments with whom we have been working in these projects have played a major role in India's outstanding agricultural success in the past few years. As a further example, the International Rice Research Institute project at Hyderabad has yielded several new promising strains of rice that are helping to substantially increase rice production. Overall, AID is quite proud of the role it has played in assisting India to increase its agricultural production.

Attached are our detailed comments on GAO's recommendations and certain of its conclusions, as well as action taken or underway to deal with the project problems identified in the report.

D. G. MacDonald
Bureau for Near East and South Asia

Attachment - a/s

AID Detailed Comments on GAO's Draft Report Titled
"Review of AID Technical Assistance to Support Indian
Agricultural Development"

AID's comments on GAO's recommendations, suggestions and conclusions are as follows:

Recommendation No. 1 - Definition of Objectives for Project Technicians

"Define the objectives of the technicians in more specific terms and arrange for completion of preparatory field work and data gathering prior to arrival of the technicians."

Comment:

It should be noted that in addition to the general objectives included in Project Proposals (PROPs) and Operational Work Plans (OWPs), more specific objectives are spelled out in the PIO/Ts 1/ and technician "proformas", both of which have been in use for some time. The proforma is a jointly developed unofficial document prescribing the job to be done by the technician. However, in the initial stages of some projects, while the objective may be clear enough (e.g. helping to solve production problems in the field, or improving coordination between agricultural institutions), the means of achieving those objectives may involve use of innovative approaches and work with embryonic administrative structures, and in some instances, the best planning and implementation efforts are often subject to a certain degree of trial and error. With respect to the need in some instances for clearer [5] definition of objectives of technicians, we believe our revised annual project planning and evaluation system (discussed in more detail under Recommendation No. 5) provides the basis for implementing this part of Recommendation No. 1. The new system establishes a "logical framework" for each project and defines in specific terms the project goal and purpose as well as specific inputs required from all sources and parties in order to produce the desired project outputs. In addition, the revised project proposal document (PROP), while identifying broad goals, also identifies expected outputs and inputs over time for the life of the project in more systematic detail than previously required by AID. With this kind of detailed initial planning (which addresses the problem raised by GAO regarding the need

1/ The official document representing a request for a contract technician's services.

to complete preparatory field work prior to arrival of the technicians) and with better annual work plans involving on-going evaluation of project progress, a concerted effort is being made to solve the problems discussed by GAO. [6]

Recommendations No. 2 and 3 - Indian Counterparts

"In concert with the Government of India, seek the appointment of Indian counterparts who possess the skills necessary to assist in carrying out the project, are receptive to working with AID technicians, and understand the role of these technicians in their program." [7]

"Discuss with officials of the Government of India the problem of the high turnover rate of Indian counterparts with a view toward obtaining authorization for longer tours of duty for personnel in these positions."

Comment:

Although our project plans call for the designation of qualified Indian technician counterparts by the sponsoring Indian institution or organization prior to our sending technicians to India, sometimes properly qualified Indian technicians are not available. In such instances, we and the sponsoring Indian institutions undertake as quickly as possible to find and train counterparts. With respect to that portion of the turnover problem in individual projects caused by promotion and transfer of participants and counterparts to positions of greater responsibility, we are reluctant to conclude that such mobility is not also in India's development interest. As important as these technical assistance projects are, we recognize that there are other particular needs for the services of some of the best qualified Indian technicians which the Government of India and the sponsoring institutions may consider of even higher priority. In an effort to reduce the turnover of counterparts caused by the incentive of higher pay in other jobs, most of the Indian agricultural universities have adopted pay schedules providing improved benefits as recommended by the University Grants Commission. For the same reason the All-India Coordinated Rice Improvement Program has been permitted to adopt higher compensation schedules in order to assist in holding technicians for longer tours of duty in that important activity.

Recommendation No. 4 - Logistical Needs of U.S. Technicians and Their Indian Counterparts

"Discuss with officials of the Government of India the [8] logistical needs of the technicians and their Indian counterparts with a view toward having dependable equipment and reasonable expenses furnished to the counterparts."

Comment:

The case of the ineffective or inoperative air conditioners cited by the GAO on page 31 of the report was indeed unfortunate, and we hope that recurrence can be avoided in all future assignments of technicians. However, the logistics support problem in this case, involving a technical assistance team at a project site 200 miles from the nearest city, is not typical, and technicians are generally able to obtain the necessary repairs and replacement of equipment to correct such problems through their regular contacts with the USAID Mission. Technicians are fully briefed on the nature of their post prior to assignment and a 25% salary differential provides financial compensation for the hardships of living in remote areas. We appreciate GAO's comments on the case cited and the USAID will be alert to identify and correct other problems or potential problems of logistic support for field technicians.

Recommendation No. 5 - Evaluation of Technicians' Efforts Within the Context of Project Objectives

"Including in the necessary contractual documents (project papers and contracts) information on project objectives and goals which realistically relate to the contractors capabilities and efforts."

Comment:

Under AID's improved project proposal and evaluation system developed and put into use about a year and a half ago, important elements and plans for each project are outlined in a "logical framework" matrix presenting clear definitions of and relationships between goal, purpose, input and output, as well as assumptions made and conditions expected to be prevailing at the end of the project. This matrix is designed to provide the basis upon which judgments and actions with respect to changes in project agreements, work plans, contracts and periodic evaluations are made. It is AID's intent that the contractor's Chief of Party and the contract

technicians be thoroughly familiar with the project matrix and, in fact, participate with AID and the host government in the planning and review process in which the "logical framework" is defined and adopted. However, we do not plan to include detailed information on project objectives [9] and plans related to the contractor's capabilities and efforts in the contractual documents as suggested in Recommendation No. 5. Our experience thus far with the revised systems supports our belief that the present approach provides a better way to achieve project objectives.

Recommendation No. 6 - Annual Work Plans for Each Technician

"Including in its contracts for technical assistance a requirement for each technician to prepare annual plans which describe his goals and course of action."

Comment:

Although the requirement for annual project work plans for each technician and counterpart is not formally included in AID's contracts and agreements on technical assistance, [10] the intent of GAO's suggestion is being carried out in practice through the Operational Work Plans and detailed implementation plans for each technical assistance project. In cooperation with the U.S. university contractors and the Government of India the USAID Mission in India is seeking to improve these project work plans by relating them more specifically to the role of each technician and his counterpart.

With respect to GAO's comments on the role of the Chief of Party of U.S. technical assistance teams, we assume that the GAO recognizes that advisors working in Indian agricultural universities may on occasion feel frustrated because their policy advice is not sought as often as they would like. In general, it is desirable at a mature stage in a project to see the Indian institution taking a stronger role in policy matters and the U.S. advisors a weaker role.

Recommendation 7 - Annual Review of Technician Performance

"Reviewing on an annual basis the performance of each technician and obtaining evaluations of the technicians' work from Indian officials as well as their suggestions for strenghtening the planning and application of AID's efforts."

Comment:

Performance of AID's own direct hire technicians is, of course, reviewed formally on an annual basis. In the case of contractor technicians, we do not believe it is sound management policy for AID Missions to undertake formal evaluation of performance of individual technicians assigned to a contractor's field team, inasmuch as we look to the contractor and to his representative, the Chief of Party, for specific performance under the contract. It is they who have the responsibility for review of performance of individual technicians who are members of the team. However, AID's revised project evaluation system provides for annual USAID Mission review and evaluation of technical assistance projects, [11] and within this context we believe that USAID Missions have an adequate opportunity to review performance of the contractor and the contractor's field team. Moreover, the Government of India generally makes a thorough assessment of performance of technicians prior to extending a technician's tour of assignment or approval of an additional tour.

AID Comments on Certain Report Findings and Conclusions

There are several sections of the report which we believe should be modified to bring them up to the general high standard of the rest of the report. We are commenting on these in the order in which they appear in the report.

Farm Size - Page 10

The several problems listed on page 10 as preventing greater progress in agricultural development are extremely broad and their actual impact on agricultural progress virtually impossible to determine. In India with its low labor costs, farms under $7\frac{1}{2}$ acres are not necessarily uneconomical, although, as the report implies, special [12] steps must be taken to assure that small farmers have adequate access to credit, and this is, in fact, a major policy objective of the Indian Government. Moreover, many scholars agree that given access to credit, small farms in India are more efficient because they get more intensive labor and care.

Further, we believe that it is erroneous to infer that small farmers have been unable to obtain credit or take advantage of the benefits of fertilizers, high yielding seeds, pesticides and some farm equipment. There are

a number of sources of credit other than commercial banks. For instance, Credit Cooperative Societies advanced short and medium term credit to the extent of more than 5 billion rupees in 1969-70 and 6.1 billion in 1970-71. Also two new subsidized credit projects were approved in 1970-71: (1) the Small Farmer Development Agencies and (2) the Marginal Farmer and Agricultural Labor Projects. Both of these are designed to assist smaller farmers and will be initiated in 87 districts with credits of 2.5 billion rupees and involving 3.2 million farm families. Due to government and cooperative-sponsored programs, and to market incentives many small farmers have had access to the inputs (fertilizer, high yielding seed, pesticides, etc.) which were essential to the development of the "Green Revolution". And, of course, the decision of Indian farmers, large or small, to take advantage of improved technology is generally based on a combination of factors, not merely farm size. Evidence to date indicates that small farmers have in fact adopted the new "Green Revolution" technology in large numbers.

Foodgrain Production - Chapter 3

[See GAO note, p. 42 .]

[See GAO note.]

On a per capita basis, using population estimates shown in table 1

the encouraging volume of the 1971-72 crop year reflects an increase in foodgrain production from 408 pounds in 1960-61 to 430 pounds in 1971-72 rather than a decrease for the period as shown on[13] page 14 of the report. Moreover, the use of 1960-61 as a base production year gives a skewed result. As indicated in the table on the following page, per capita foodgrain production for the 1960-61 crop year was the highest since at least 1948-49 and was not exceeded until the 1970-71 production year.

It is suggested that the use of average foodgrain production figures over a five year period would provide a more statistically valid base. Thus if the average production from 1960-61 through 1964-65 were used as a base, per capita foodgrain production would show a greater per capita increase, from 395 to 430 pounds.

[See GAO note.]

Table 1. All-India: Foodgrain production, population and per capita foodgrain production, 1949-50 to 1971-72

Year	Foodgrain production (official GOI estimates)	Population estimates: Interpolated from census counts	Population estimates: Adjusted for census under reporting	Per capita foodgrain production: Based on census counts (1) ÷ (2)	Per capita foodgrain production: Based on adjusted estimates (1) ÷ (3)
	(1) Thous. metric tons	(2) Thous.	(3) Thous.	(4) Pounds	(5) Pounds
1949-50	54,916	348,192	358,658	348	338
1950-51	50,825	354,540	365,176	316	307
1951-52	51,996	361,088	371,921	317	308
1952-53	59,201	367,844	378,879	355	344
1953-54	69,821	374,815	386,959	411	398
1954-55	68,035	382,008	393,468	393	381
1955-56	68,850	389,430	401,113	390	378
1956-57	69,855	397,090	409,003	388	377
1957-58	64,311	404,996	417,146	350	340
1958-59	77,141	413,157	425,552	412	400
1959-60	76,672	421,577	434,224	401	389
1960-61	82,018	430,280	443,174	420	408
1961-62	82,706	439,235	452,412	415	403
1962-63	80,151	448,507	462,465	394	382
1963-64	80,642	458,087	472,856	388	376
1964-65	88,996	467,986	483,598	419	406
1965-66	72,347	479,216	494,705	333	322
1966-67	74,231	488,789	506,195	335	323
1967-68	95,052	499,719	518,073	397	404
1968-69	94,013	511,001	530,322	406	391
1969-70	99,501	522,535	543,023	420	404
1970-71	107,811	534,639	556,027	445	427
1971-72	111,000[a]	546,955	569,500	447	430

GAO note: Notes relating to the source of the data have been deleted by GAO. GAO independently verified this information to GOI official records and found it to be materially correct.

[a]Estimated.

[See GAO note, p. 42 .]

Problems Limiting Technicians' Effectiveness - Pages 25-29

On page 25 the report states that AID technicians' assistance "has not been too well received". Given [14] the specific problems raised in the report, we do not believe they are of such significance as to justify

the rather general and potentially misleading statement that the assistance given by many hundreds of U.S. technicians in the field of agriculture over the years has not been well received. The reference in the report to this subject is limited to the discussion of what GAO terms reluctance of Indian university officials "to accept advice on major development and administration policies". On the whole, we believe AID-financed technical assistance, particularly in agriculture, has been effective and very well regarded, not only by university officials and Indian technician counterparts, but by Ministry officials and other high-level officials of the Government of India as well. In addition, we believe the full record bears out that there has been a very significant direct and indirect input by U.S. technicians and advisors into the organizational structure and policies of the Indian agricultural universities (e.g., the land-grant concept on which these universities are based). A further important indicator that the Government of India values the work of U.S. agricultural technicians highly is the number of requests AID receives for additional technicians -- in fact, many more requests than AID is able to accommodate.

[See GAO note, p. 42 .]

GENERAL ACCOUNTING OFFICE COMMENTS

ON THE LETTER INCLUDED

AS APPENDIX III

We requested the AID Administrator on August 19, 1971, to review and comment on a draft of this report. AID responded by letter dated January 7, 1972, which is included as appendix III. In view of those comments and later developments, changes were made to the draft and are incorporated into this report. Some agency comments not now applicable were deleted.

The following comments are keyed to the AID letter, appendix III.

1. Our comments on these matters are presented later in connection with the detailed comments.

2. See comment 5.

3. We believe that chapter 3 of this report, "Progress in Agricultural Development," as revised to include later information, fairly presents the progress in Indian agricultural development in recent years.

4. Although most of the universities have grown rapidly, it is difficult, if not impossible, to attribute this growth to the advice of U.S. technicians. Any statements of success on AID's part must be tempered by the realization that the bulk of the planning, financing, and employees for the universities has been Indian.

5. We recognize that AID has worked to improve its definition of technical assistance project goals. The problem with project goals in India is discussed in chapter 2 of this report and on page 36.

Although AID's new evaluation system appears to be a step in the right direction, we believe that considerable additional work, now going on, will be required before the problem of defining the objectives of the technicians in specific terms can be resolved.

6. These comments, in our opinion, address the substance of the proposed recommendation.

7. We found that one of the most frequent frustrations of the technicians was the constant shifting of Indian counterparts. The technicians felt, and we strongly agree, that, if their efforts were to have lasting significance, the technicians must be able to develop sound professional relationships with at least one counterpart. This is understandably difficult when new counterparts are assigned to them every few months. Moreover we do not accept AID's rationale for the high turnover. We found that the frequent shifting resulted from personnel policies which allow advances within an organization regardless of background or training, not from a conscious effort to promote or transfer persons within a specialized field. Therefore we believe that AID, rather than rationalize its problems, should place more emphasis on stable counterpart positions in future discussions with GOI. But, in view of the current uncertainty in respect to future U.S. assistance to India, we believe that it is inappropriate for us to recommend that such discussions be pursued at this time.

8. As noted above we believe that it is inappropriate for us to recommend that such discussions be pursued at this time in view of the current uncertainty in respect to future U.S. assistance to India.

9. AID does not plan to include in the contractual documents information on project objectives and goals that realistically relates to the contractors' capabilities and efforts contrary to our proposed recommendation. This matter is closely related to our proposed recommendation No. 1, which suggested that AID define the objectives of the technicians in more specific terms. (See comment 5 above.) We agree that, until the objectives of the technicians are stated in specific terms--in terms that can be measured or observed--little purpose would be served by including them in contractual documents.

10. We believe that the intent of this proposed recommendation is being satisfied.

11. These periodic reviews of the performance of the technicians, including reviews made by GOI itself, address the proposed recommendation reasonably well.

We still feel that AID's annual project evaluation should include assessments of individual technicians, even of those assigned to a contractor's field team. We believe that it is unrealistic for AID to expect to receive an honest, critical evaluation from the contractor's chief of party. First, a negative rating for a technician reflects on the chief of party's efforts as well as on the status of the university. Second, the chief of party may be too close to the action to make an impartial evaluation even if he wanted to.

The annual project evaluation is designed to determine if project outputs were produced, if the outputs achieved the project purpose, and if the achievement contributed to the higher order goal. The evaluation does not stress individual technicians. Success in meeting the project purpose often hinges heavily on Indian inputs; the impact of the individual U.S. technician may not be easy to determine. A successful project may not always mean a valuable contribution by every AID technician.

We agree that GOI makes a thorough assessment of a technician before his tour is extended or before he is approved for an additional tour. Waiting for 2 years to find that GOI feels that the technician is wasting his time is akin to

closing the barn door after the horse is gone. We believe that GOI should be asked to evaluate the technician's work at least at his midtour point. This evaluation should give AID some ideas for strengthening the technician's work or possibly may lead AID to consider canceling the technician's tour of duty.

12. During our review in India, we were informed by AID technicians there that one of the major problems affecting food grain production was the small, uneconomical size of farms. We were informed also that such farms could not get credit easily because of their small earning power and that the lack of credit restricted their use of seeds, fertilizers, and other inputs and this, in turn, kept their yield low.

In its comments on a draft of this report, AID pointed out that Credit Cooperative Societies advanced short- and medium-term credit to the extent of more than 11.1 billion rupees in a recent 2-year period. No indication is given, however, as to whether small farmers' participation in these credits was significant.

AID pointed out also that two new subsidized credit projects had been recently approved, which were designed to assist smaller farmers. We believe that, if these projects successfully provide needed credit to small farmers for the use of the new technology, these small farms will contribute to increased food grain production.

In comparing information obtained in India with information furnished by AID in Washington, D.C., it appears that the extent of small farmers' participation in the new technology is not clearly known.

13. See note on page 14.

14. We have deleted the quoted material from the final report because we agree with AID's comments in this particular respect. Even so, we have kept AID's comments in the report because they constitute an important AID statement of its views on the Indian receptivity of AID technical assistance to Indian agriculture.

PRINCIPAL OFFICIALS RESPONSIBLE

FOR THE ACTIVITIES DISCUSSED IN THIS REPORT

	Appointed
DEPARTMENT OF STATE	
SECRETARY OF STATE:	
Dean Rusk	Jan. 1961
William D. Rogers	Jan. 1969
AMBASSADOR TO INDIA:	
John Kenneth Galbraith	Mar. 1961
Chester E. Bowles	June 1963
Kenneth B. Keating	June 1969
AGENCY FOR INTERNATIONAL DEVELOPMENT	
ADMINISTRATOR:	
Fowler Hamilton	Sept. 1961
David Bell	Dec. 1962
William S. Gaud	Aug. 1966
John A. Hannah	Mar. 1969
DIRECTOR, MISSION TO INDIA:	
C. Tyler Wood	Nov. 1959
John P. Lewis	Sept. 1964
Leonard J. Saccio	Oct. 1969
Paul L. Occhsli (acting)	Dec. 1970
Howard E. Houston	May 1971

U.S. GAO, Wash., D.C.

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