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FINAL REPORT

of
The Pennsylvania State University/USAID
AUD Program
under
Contract No. AID/nesa 346

Office of International Agricultural Programs
The Pennsylvania State University
University Park, Pennsylvania 16802

The Pennsylvania State University
Office of International Agricultural Programs
University Park, Pennsylvania

Final report on the technical assistance program associated with the Agricultural University Development Program at Maharashtra Agricultural University (and later Mahatma Phule Agricultural University) in the State of Maharashtra, India, sponsored by the Agency for International Development, Washington, D. C., and the U. S. AID Mission in New Delhi, India. Copies of terminal reports for all Consultants and Advisors under the Contract Program have been provided to the USAID Mission in New Delhi, India. Semi-annual reports were made to USAID Mission in New Delhi and annual reports were submitted each year. The terminal, semi-annual and annual reports provided detailed information on the recommendations and programs of Penn State staff members.

FINAL REPORT

I. ADMINISTRATIVE DATA

Name of Contractor: The Pennsylvania State University
University Park, Pennsylvania

Contract Number: AID/nesa 346

Project Title and
PIO/T Numbers: Contract Between the United States
of America and The Pennsylvania
State University
PIO/T 386-281.8-3-70305
PIO/T 386-281.8-3-80289
PIO/T 386-281.8-3-90087
PIO/T 386-281.8-3-00052
PIO/T 386-281.8-3-10071-A-2
PIO/T 386-281.8-3-20184-A-3

Contract Period: October, 1967 - June, 1973

Period of Report: October, 1967 - June, 1973

Name and Title of Person
Preparing Report: Dr. R. H. McAlexander
Coordinator of International
Agricultural Programs

II. OBJECTIVES AND SCOPE OF WORK

The Pennsylvania State University entered in Contract No. AID/nesa 346 with the United States Agency for International Development effective October 1, 1967 and under this contract The Pennsylvania State University agreed to assist in the establishment and operation of the Maharashtra Agricultural University in the State of Maharashtra, India. Penn State was to assist the State of Maharashtra and the Indian University in developing policies, plans and programs, and to advise on the organization, administration and operation of the University, the development of teaching, extension and research programs, and on physical facilities and equipment for the University. More specifically, The Pennsylvania State University was to assist the Agricultural University and the State of Maharashtra with the following basic objectives:

- A. To develop within the University an administrative organization with a large degree of autonomy capable of directing all professional as well as supporting functions of a state institution dealing with agricultural research, teaching, and extension.
- B. To introduce instructional techniques which required students to learn by thinking and doing, and train them to perform definite jobs in agriculture.
- C. To develop extension programs which were coordinated with the instructional and research functions of the University.
- D. To integrate state research programs with the University and to develop a research effort aiming toward the solution of problems facing Maharashtrian, and Indian agricultural production.
- E. To provide counsel in the planning, construction, and maintenance of physical facilities and equipment of the University.

Penn State quickly recognized that the fulfillment of the above objectives was a tremendous undertaking, particularly in view of the cutback in AID funds from the level anticipated for the program, the political influence at the state level on control and operation of the Agricultural University, and the limited effective leadership within the University. Of course, a major obstacle to completion of the program was the decision of the Government of India to terminate technical assistance of all U.S. Universities including Penn State effective June 30, 1973, but with virtual cut-off of the program in Maharashtra in September, 1972.

III. BACKGROUND INFORMATION ON MAHARASHTRA AGRICULTURAL UNIVERSITIES

The Maharashtra Agricultural University was established on August 30, 1967 by the Maharashtra Legislature. The new University was patterned after the land-grant system in the U.S., with teaching, research and extension planned as integral parts of the program. Also the U.S. system of instruction and grading was adopted with the assistance of Penn State staff. These changes represented tremendous departures from the traditional European system being followed in agricultural colleges in Maharashtra in which teaching was their major function and the research and extension activities were conducted by the Ministry of Agriculture. Further, seven state Government colleges of agriculture, two government veterinary colleges and two non-government colleges with majors in agriculture were placed under the control of the Maharashtra Agricultural University (See Figure I). A new central campus was selected at Rahuri in an isolated portion of the State, 100 miles from Poona. This central campus was to be the hub of all operations, with the central University Administrators located there, all new undergraduate programs to be initiated there, and all graduate programs to be transferred to this campus.

Development of the new campus required removal of cultivators and the clearing and levelling of approximately 10,000 acres of land. Three temporary buildings were first established at the site for use as offices and classrooms along with temporary facilities for staff and visitors. By June 1973 a basic science building, part of an agricultural building, hostels for 500 students, 150 residences, dairy cattle buildings and a few other livestock buildings had been constructed and were being utilized.

Penn State faculty members lived in Poona during their tours of duty and were officed in Department of Agriculture facilities. Plans had been made to transfer offices and families to Rahuri in July, 1972 but because of the Government of India decision to terminate technical assistance, staff members continued to live and to keep an office in Poona. Until July, 1972, when one residence was made available to Penn State staff members at the new campus, the working, eating and sleeping conditions at Rahuri were very modest.

The Maharashtra Agricultural University was established with the Governor as Chancellor, the Minister of Agriculture as Pro-Chancellor, and a Vice-Chancellor as the main administrator. The Vice-Chancellor was to be appointed for five-year periods. Also, posts of Directors of Research, Teaching and Extension, and other administrative positions were established. An Executive Council of 16 members was established with the Vice-Chancellor as Chairman, and this was the main governing body for the University. A Court of approximately 90 members was set up which had similar powers as a Board of Trustees in U. S. Universities. With the Governor and Minister of

THE MAHARASHTRA AGRICULTURAL UNIVERSITY

Maharashtra, India

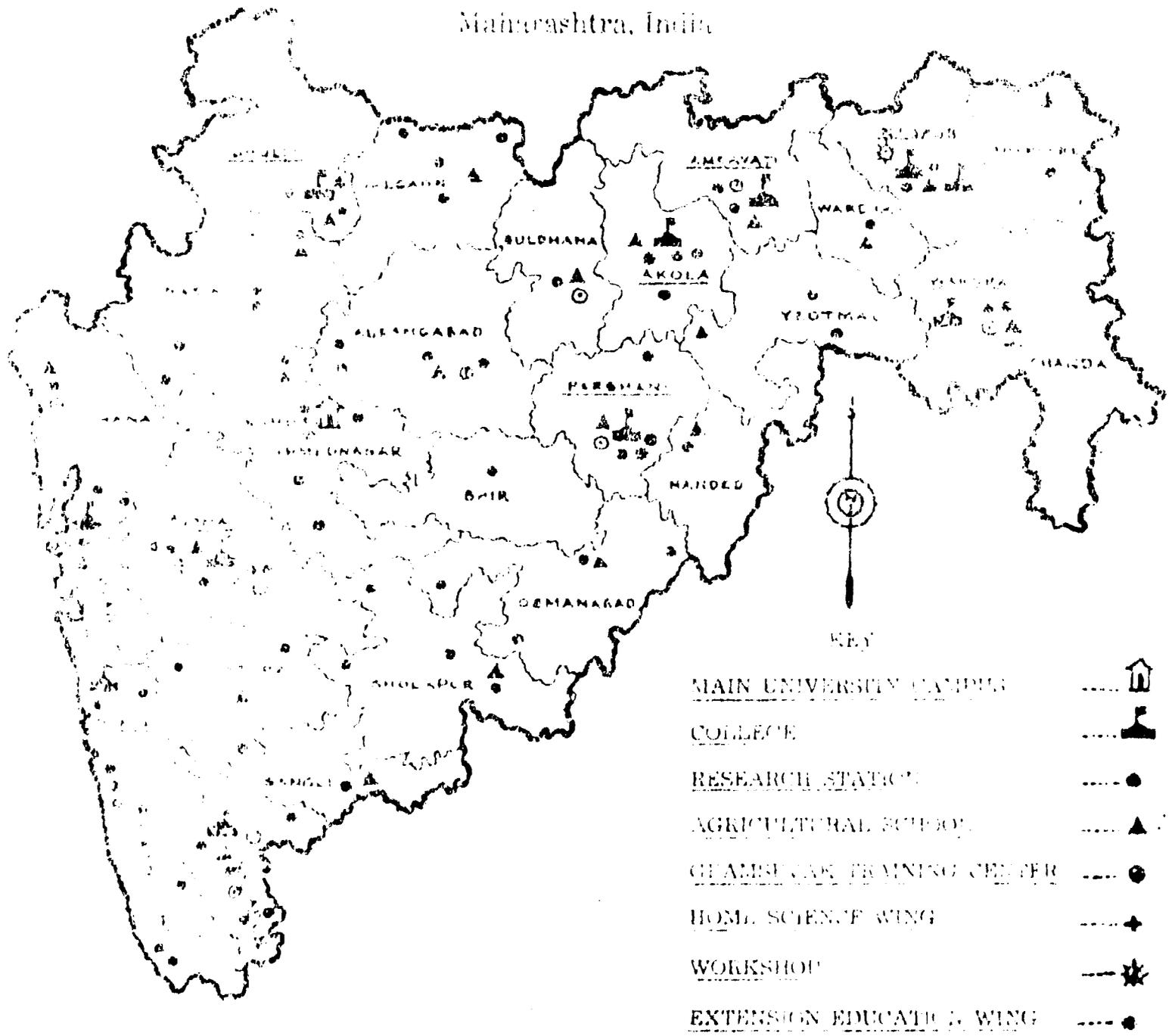


Figure 1

Agriculture as Chancellor and Pro-Chancellor, respectively, it is obvious that politicians could have a tremendous influence in the administration of the University. The first Vice-Chancellor appointed for the University lacked administrative background for the position and remained in office until July 1971. He left office after a several month student strike in which he acceded to student demands for his resignation. Over six months later a very able researcher and administrator took over the position of Vice-Chancellor and was still in this position at the termination of the Penn State program.

In September, 1969, the Maharashtra State Legislature established two agricultural universities in the state, and arranged for a division of agricultural and veterinary colleges and research stations under the then existing Maharashtra Agricultural University. The two new agricultural universities were Punjabrao and Mahatma Phule. Mahatma Phule Agricultural University included Agricultural Colleges of Dapoli, Kohlapur, Dhulia and Poona, the Bombay Veterinary College and 53 research stations and sub-stations in Western Maharashtra. The Agricultural Colleges of Akola, Parbhani, Nagpur, along with Nagpur Veterinary College and remaining research stations and sub-stations became a part of Punjabrao Agricultural University. Mahatma Phule kept the Rahuri site for development of its central campus and the Punjabrao central campus was established at Akola.

Division of the Universities resulted in the transfer of large numbers of personnel. It resulted in both universities having relatively greater shortages of top administrators and faculty. Further, it resulted in a division of operational and building funds.

The establishment of the two Agricultural Universities raised the question of whether Penn State would work with one or both Universities. Penn State recommended working with both Universities, subject to several restrictions, but AID Mission was unable to make arrangements for such a program. Apparently the main difficulty in negotiation was that agreement was not obtained with the Government of Maharashtra on an appropriate governing body which would assure that program duplication would not occur. Thus, Penn State continued to be associated with Mahatma Phule Agricultural University for technical assistance, although nearly one-third of the participants under the program came from Punjabrao. This was due to commitments made during the first two years of the program.

In May, 1972, the Maharashtra Legislature decided the State of Maharashtra should have four agricultural Universities. This decision, as had the previous one on establishing two agricultural universities, was a political decision, based on pressures of constituents in the various areas of the state. Establishing two more universities resulted in further shifting of administrators and staff, leading to some further

dilution in the nucleus of well-trained faculty members and administrators within each university. Also, with operating expenses already a problem for the State with only two agricultural universities, the additional cost of establishing two more universities was encountered by the State,

It is pointed out, however, that Maharashtra is a large state, approximately 500 miles from south to north, nearly 700 miles from east to west, and has a population of approximately fifty million people.

Establishment of new universities in 1972 did not mean the complete development of new facilities and acquiring of complete staff. It involved shifting of headquarters for existing colleges to one of the colleges of agriculture. This would require building of some facilities at the college selected as the new central campus, and adding some administrators and staff to the program. Having four agricultural universities serving fifty million people with sixty per cent of the population living in rural areas, was an argument used for the division. Of course, many examples, can be cited of agricultural colleges serving fewer constituents in India and in other areas of the world. Despite this, the division into four universities was questionable from the standpoint of cost, potential effect on the quality of instruction, research and extension programs.

IV. MAGNITUDE OF PROGRAM

Penn State provided approximately 162 man-months of staff time in India during the period of the contract. This included about 126 man-months for long-term advisers (one died after six months in India) and 36 man-months for ten different short-term consultants. Two of the short-term consultants served for two assignments of three months each and one short-term consultant returned for a two-year assignment. (See Tables 1 and 2). In addition, a campus planning and development advisor made occasional visits to Maharashtra during the period of January 1968 to June 1972.

The Program was administered by the College of Agriculture at Penn State through the part time activity of a campus coordinator. Two of the campus coordinators also served as long-term advisers and chiefs-of-party at various times during the Contract period. A secretary at the campus on a part-time basis assisted with the program.

Many administrators and faculty members at the campus of The Pennsylvania State University provided support to the program. Six different administrators and representatives of the University made executive visits to India. Several department heads were involved in the recruitment and assignment of personnel to the program. Also, many faculty members were associated with providing technical back-up to the program. This occurred particularly with individuals serving on assignments both prior to and after assignments in India.

The campus coordinator provided an important contribution to the program through the assistance in recruitment, preparation and transfer of personnel to India and in the backstopping of personnel on assignment in India. This activity was made easier through the excellent cooperation of the AID technical staff and the contracting office in Washington.

Penn State also actively participated in CUSURDI (Council of U.S. Universities for Rural Development in India), an organization which was helpful in facilitating the development and coordination of several activities associated with the Contract Programs in India. The Dean of Agriculture served as a member of the Council and was chairman of the group for a year. In addition, the campus coordinators of the six CUSURDI Universities worked closely with the Council, AID/Washington and AID Mission in coordinating activities associated with the India programs.

Twenty-nine participants from Maharashtra were selected for Ph.D. degree programs under the Penn State-USAID Contract. (See Table 3). Participants were selected from the faculty of Maharashtra Agricultural University during the first two years and from Mahatma Phule and Punjabrao Agricultural Universities during the latter part of the program. Punjabrao participants were included under the program because of commitments made to participants prior to the separation of Maharashtra Agricultural University into two Universities.

One non-degree participant from Maharashtra Agricultural University was approved for a program in the U. S. This was the first Vice-Chancellor who spent approximately two weeks in Washington and at Penn State.

Ten of the twenty-nine degree participants were on joint programs in which they spent one-year in the U. S. and the remaining portion of their program at the Indian Agricultural Research Institute near Delhi. Of the twenty-nine, only four were unable to complete their total programs as planned. One participant returned to India early because of illness, the others returned prior to obtaining Ph.D. Degrees because of scholastic difficulties. This rate of attrition is considered extremely low.

Participants were selected over a wide area of disciplines based mainly on priority of need for trained personnel at Maharashtra Agricultural University. The participants included three in veterinary science, five in entomology, two in plant physiology, four in agronomy, three in dairy, two in animal science, three in plant pathology, four in agricultural extension, one in agricultural economics, one in horticulture and one in agricultural engineering.

V. ACCOMPLISHMENTS

Penn State entered into the Contract at a time when USAID was cutting back on funding for programs in India. This led to immediate curtailment in the proposed level of staffing, development of projects, and in the number of participants over what Penn State had planned when undertaking and getting the program underway. Further, with the closing out of the program after only about five years, with the latter part of the program also drastically curtailed due to freezing of positions and participant departure, and a single technician on assignment during the last nine months, it is obvious the program was held at a very low level of technical input and participant training for most of the contract period. This low level of technical inputs and of participant training is further emphasized when comparison is made with other University Development Programs under AID Contracts in India.

Despite the continued pressure for holding the level of technical personnel at a lower level than Penn State recommended, significant contribution was made to the Maharashtra and Mahatma Phule Agricultural Universities with the limited personnel approved for assignment. Penn State demonstrated that they could make very efficient use of short-term consultants under the program. This was possible through detailed planning by the chiefs-of-party in close cooperation with home campus personnel, and in the selection of highly qualified personnel. Two of these consultants did return for subsequent short-term assignments and one for a two year period. This, of course, proved to be an especially effective means of utilizing services of the consultants.

In general, short-term consultants gave major emphasis to assistance in the development of curricula both at the undergraduate and graduate levels in their fields of specialty. However, attention was also given to identifying areas of needed research, and some recommendations were made on extension programs.

Over the period of the contract consultants were provided in most major agricultural disciplines, and since one of the main problems was the shifting from a traditional two semester system with external examinations to an internal grading system with three terms per year, much assistance was needed for development of a curriculum and courses within each discipline. Since most courses previously had been taught on a yearly basis, a large number of new courses and a considerable revision of old courses had to be made. This immediate attention to course work was necessary as the freshman class and new graduate students were started under the new program in mid-1969. This led to a gradual change over to the trimester internal examination program with one less class on the traditional system each year. With only limited faculty additions at the University the change-over resulted in a

tremendous load for existing Indian faculty. In addition senior faculty members were called upon to develop new courses, and to review and improve their research activity.

Considerable time was spent by the chiefs-of-party in working with faculty on teaching methods and techniques, testing, grading, and teacher and course evaluation. Many conferences, seminars and workshops were held dealing with the above items.

Several of the Penn State consultants and advisors assisted with teaching of courses and all presented seminars in their fields of specialization. The courses were taught in the areas of plant pathology, agricultural economics and dairy science. Penn State personnel were not encouraged to step in as teachers as the greatest need was considered to be in curriculum development and improving and initiating research at this particular stage of the program. This also involved assistance on recommendations for library materials and equipment needed for teaching and research.

Course of study programs recommended by 1969 Consultants and counterparts with the exception of agricultural engineering and home economics, were made available to all seven agricultural colleges under the Maharashtra Agricultural University. The agricultural engineering and home economics programs were to be developed only at the Rahuri campus. Later consultants were associated with only Mahatma Phule Agricultural University which included only four colleges of agriculture. However, copies of reports were available to Punjabrao Agricultural University and meetings of administrators and faculty from the two Universities did lead to use of materials of many consultants in both Universities even though formal participation of Penn State with Punjabrao was not possible.

The Home Science short-term consultant, along with her counterpart, developed basic plans and an outline of a curriculum for a College of Home Science for Maharashtra Agricultural University at Rahuri. Despite this excellent planning, after having approved a Home Science College, the University delayed action on the implementation of the program as well as the construction of buildings, and had not started this College by the termination date of the Contract. It is interesting that the Punjabrao Agricultural University became very interested in proceeding with the development of a College of Home Science and was making use of the plans prepared by the Penn State Home Economist and her counterpart.

A new five-year program in agricultural engineering was begun in the summer of 1969. This followed the first short-term tour of duty of the Agricultural Engineering Consultant, and the consultant returned again two years later for three months to provide further assistance. This use of the consultant with continued contact between himself and his counterpart

during the interim period and subsequent to his last assignment provided an excellent arrangement for utilizing the services of the consultant. The program was able to be initiated by utilizing faculty and facilities of a University in Poona during the first three years. The program was then transferred to Rahuri and use made of new temporary buildings which were designed for this use by the consultant and his counterpart. Plans made for a full-time advisor in agricultural engineering had to be cancelled when the "freeze" was placed on additional personnel about eighteen months prior to actual termination of AID programs in India. As one part in the program the manpower needs for agricultural engineers were assessed and an internship arrangement with industries was developed. This program illustrates how a dedicated consultant and counterpart, with backing of a few administrators, were able to get a program underway with a minimum of resources. If the program had been continued for another three to five years, with the assistance of a long-term advisor and continued visits of a shorter time by the original consultant, an outstanding program could have been developed. Nevertheless, valuable assistance was provided during the period of the contract, and the program was off to a good start.

The Animal Science short-term consultant also served for two tours under the program. During the first three months assignment attention was placed on curriculum and research needs in Animal Science, but emphasis was placed on the development of a swine program during the second tour of duty. In this second assignment he took major leadership in planning for a disease-free swine herd at Mahatma Phule Agricultural University and designed plans for such a facility. This plan was endorsed by the University and by the Department of Animal Husbandry of the Ministry of Agriculture. The consultant arranged to obtain a breeding herd of eighteen animals for shipment to Maharashtra with the only cost to the Mahatma Phule Agricultural University and the Ministry of Agriculture being the transportation of animals from the U. S. to India. The animals were to be donated by The Pennsylvania State University and several swine breeders. Unfortunately, the approval of the Government of India for this shipment of swine to India was not obtained by the Ministry of Agriculture before the termination of the Penn State program in India. Despite the failure of the transfer of disease-free herd to Mahatma Phule, the program of the consultant was very worthwhile from the standpoint of identifying existing problems of swine production in Maharashtra, in the development of plans for the Agricultural University for providing good breeding stock to farmers, in developing coordination between the University and Animal Husbandry personnel of the Ministry of Agriculture, as well as providing assistance to the University in developing a research and teaching program involving swine.

During the Contract period, more emphasis was placed on teaching and research than extension but termination of the contract occurred at a period when increased emphasis was being placed on extension by Penn State personnel. However, recommendations for the development of the agricultural extension program for the University were developed by a Penn State consultant and his counterpart. These recommendations emphasized the role of the University as being focused on training, informal teaching and interpreting of research findings, or the overall educational and organizational leadership for agricultural and working closely with extension workers in the field who were under the direction of Departments within the Ministry of Agriculture.

During the first few years, the Director for Extension was utilized mainly for getting the Rahuri site cleared of cultivators, and later this position was abolished. However, the duties for extension were later assigned to a Dean in the College of Agriculture. In the meantime the Department of Agriculture within the Ministry continued to carry out the bulk of the extension education activity. It is anticipated that with the appointment of a Dean of Agriculture under the new leadership of the University that many of the recommendations and suggestions of the Penn State consultant and his counterpart will be adopted.

The contribution of the consultant in campus planning and development needs special attention in this section. This consultant made six to eight visits each year to Maharashtra during the period of 1968-72, with visits varying from a few days to two weeks, depending on the particular problems being encountered. He had headquarters in New Delhi, and although not under the Penn State Contract, he worked closely with the Penn State team along with several of the U. S. Universities on campus planning.

This consultant along with a chief-of-party was responsible for obtaining the assistance of one of the best architects in Asia for planning the new campus at Rahuri. This has resulted in the Rahuri campus having an excellent physical plan, and when completed, it should be a campus with buildings and facilities equal to any Agricultural University in India. Plans were made for phased construction with hostels, a basic science building, an agricultural building, and faculty and staff residences in the initial phase. By the end of the contract program the basic science building, one-third of the agricultural building, hostels and 150 residences had been completed. Plans had been made for later construction of buildings for library, agricultural technology and dairy science. Penn State consultants and advisors had assisted in the development of these plans including equipment needs.

A campus planning and development committee was established by the Agricultural University to work with the campus planning

consultant and the chief-of-party. This committee had to do much homework to be ready for the visits of the consultant and it also provided a means of getting partial long range plans developed for the University. These plans had to be prepared to determine building and equipment needs so the chiefs of-party also capitalized on this campus planning committee for getting some long range planning done. Systematic planning for five years and longer was considered as a good idea by the University Administration but action was never taken in actually preparing these overall plans.

Five long-term positions were filled for the program with three including additional duties as chief-of-party. The advisor in Dairy Breeding succumbed after six months on the program and was replaced by an advisor who served for a two year period. Additional long-term positions for advisors were recommended by Penn State but for various reasons these were not possible. Reasons included lack of funding by AID, lack of ICAR approval, and freeze on personnel over a year before close out.

One of the major problems facing long-term personnel, and to a lesser degree the short-term consultants, was the lack of effective counterparts. This was associated with the failure of the Vice-Chancellor and Executive Committee to take action on Department Heads and other key administrators. At one stage in the program in 1971 the positions of Research, Resident Teaching and Extension Directors were open, and no department heads named except on a temporary basis, the Dean of Agriculture had been transferred without a replacement, and over 100 staff positions were vacant. The first Vice-Chancellor lacked leadership and organizational capabilities and part of the delay in appointing key administrators was associated with this, and in turn, the failure to appoint appropriate counterparts. Counterparts in the areas of research and agricultural technology were provided who for various reasons were transferred to other positions with little or no later association with these programs.

Also, the division of the Agricultural University with two and finally four Universities led to shifting of faculty and administrators, which also caused difficulty in initiating and developing programs according to plans.

With the appointment of a new Vice-Chancellor in 1972 following a long student strike, it appeared that the University was again in a position for rapid development. This Vice-Chancellor was a well-known scientist with demonstrated administrative ability and leadership. However, coinciding with his appointment came a freeze on new personnel under the program. Despite this, the work of the existing Penn State staff on the program was made easier and more productive by the decisions of the Vice-Chancellor on staffing, review and improvement of teaching and research programs, and decisive action on construction of buildings at the new campus.

Assistance of the dairy breeding advisor under the Penn State Contract was one of the few positions requested by the Government of India to continue until June 30, 1973. This advisor was associated with the ICAR (Indian Council of Agricultural Research) project for crossing Gir cattle with Jersey and Holstein breeds. As indicated by ICAR, this was a long-range project which would require 10 to 15 years before tangible results could be documented. The Penn State advisor (and his predecessor who succumbed to a heart attack after six months in India) worked closely with the University in developing the facilities at Rahuri, in obtaining semen from outstanding bulls in the U.S. and in getting the breeding program underway. By June, 1973, over 300 breedable cows and heifers were on hand, and the first breedable crossbred heifer had been inseminated. In addition this advisor worked closely with his counterpart (an outstanding individual) and Ministry of Agriculture personnel in surveying and preparing a master plan for development of dairy in Maharashtra. He also assisted in planning and establishing a goat program for the University assisted in developing a master plan for Animal Husbandry, and assisted in various conferences, seminars and extension meetings. At the present time the Animal Science program (including dairy) is one of the most successful of University programs.

The division of Mahatma Phule into two Universities in 1972 again caused shifting of administrators and staff, and some decrease in funds. Despite this, the University continued to improve mainly through the leadership of the Vice-Chancellor and his administrators, up through June, 1973, when the last Penn State advisor returned to the U. S. With present leadership at Mahatma Phule, and assuming the increased funding by the state, and that Penn State could have provided a program at the level of 1969-71, it is believed that Mahatma Phule could have quickly developed into one of the top agricultural Universities in India.

One prerequisite to the development of a University is having a well-trained faculty. Sending of twenty-nine participants for training beyond their Masters Degrees from Maharashtra was a big step in this direction as these will supplement the many capable staff members they have. However, the number of well qualified faculty members for supporting four Agricultural Universities is still very low, and considerably greater number need advanced or specialized training to supply the needs of the Universities.

The overall effectiveness of the Penn State - AID program in Maharashtra cannot be determined for several years. The success is dependent on such a varied number of factors, over which Penn State nor AID did have or presently have, any control. Yet, there is already evidence of the potential for excellent physical facilities, and several programs appear to be gaining momentum including animal science, agricultural engineering,

agronomy, plant protection, and agricultural economics. Also, the University farm is rapidly being developed, and the leadership of the Vice-Chancellor is being noted, positions of administrators and faculty are being filled, U.G.C. salaries have been initiated. Applied research is being improved, so it is hoped this momentum will continue at the University.

VI. RECOMMENDATIONS

Making recommendations regarding possible continuation of any program with Mahatma Phule Agricultural University is purely academic. The Government of India decided that technical assistance should be terminated in India and this brought the Penn State-AID contract program to an abrupt halt. At the same time, a few comments are made relative to this program which could be helpful in other programs.

The program illustrated how a few long-term advisors in combination with a larger number of short-term consultants could be utilized effectively. It illustrated also the need for good leadership in the administrative areas of the host institution in order to develop a strong program. It illustrated how Penn State and AID were able to continue to provide a great deal of beneficial support to an Agricultural University despite adverse conditions dealing with poor University leadership, (to no leadership several months during a student strike) and under conditions where political decisions were detrimental to the development of a University.

There is a tremendous need for well trained staff in the University system. Whereby the program was helpful in getting some participants trained, it is believed that increased financial support on participant training would have been desirable. Support of specialized training at less than the Ph.D. level both within India and in the U.S. would have assisted in a more rapid development of University programs, although a mixture of Ph.D. and non-degree would have been desirable.

Experience in Maharashtra would indicate that a University Development type program could be organized to assist several Agricultural Universities simultaneously. Perhaps one or two long-term specialists might be stationed at individual universities and one would coordinate the visits of other specialists. Experience with returning short-term consultants and the campus planning consultant illustrated the effectiveness of such a program. Also, in studying the possibility of working with two (and later with four Universities) in Maharashtra, it appeared to be feasible to adapt our program to do this although many specialists might object to the amount of travel involved under such an arrangement.

TABLE I. Penn State Advisors and Consultants Serving in India Under The Agricultural University Development Program

<u>Advisors</u>	<u>Field</u>	<u>Period of Assignment</u>
Russell B. Dickerson	Agricultural Ed. and Univ. Adm., Chief-of-Party	January 1968 - December 1969
Robert E. Swope	Agricultural Ed. and Chief-of-Party - 1970	January, 1969 - January, 1971
William H. Cloninger*	Dairy Cattle Breeding and Genetics	February 1970 - August 1970
Frank J. McArdle	Agricultural Technology	January 1970 - December 1971
Robert H. McAlexander	Research Organization and Chief-of-Party	January 1971 - December 1972
Jesse B. Williams	Dairy Cattle Breeding and Genetics	August 1971 - June 1973
<u>Consultants</u>		
Hazel M. Hatcher	Home Science	December 1968 - March 1969
James L. Gobble	Animal Husbandry	January-April 1969
Michael R. Lynch	Extension Education	January-April 1969
Frank J. McArdle	Agricultural Technology	January-April 1969
Frank W. Peikert	Agricultural Engineering	January-April 1969
James R. Bloom	Plant Pathology	January-March 1970
Beckford F. Coon	Entomology	January-April 1970
Anthony P. Stemberger	Agricultural Economics	January-April 1970
Frank W. Peikert	Agricultural Engineering	January-April 1971
Robert B. Hickok	Water Management	Sept. - Nov. 1971
John B. Washko	Fodder Crops & Pasture Mgt.	Sept. - Dec. 1971
James L. Gobble	Animal Husbandry (Swine)	Nov. 1971 - Feb. 1972
H. James Miller**	Campus Planning & Development	Occasional visits from Delhi, Jan. 1968-June 1972

*Died while on assignment in India.

**Professor Miller was under a Kansas State University-USAID Contract and stationed in New Delhi. His services were made available to all AUD Contractors in India.

Table 3. Participants from Maharashtra Attending U.S. Universities Under AUD Program

<u>Name</u>	<u>Home College</u>	<u>U.S. Univ. Attended</u>	<u>Dates Attended</u>	<u>Field Study</u>	<u>Degree Obtained</u>	<u>Position & Location-6/30/73</u>
Ajinkya, S.H.	Bombay ¹	Penn State	4/70-12/72	Vet.Sci.	Ph.D.	Head, Dept. Pathology, Bombay Vet. Coll., Konkan Ag. Univ.
Ajri, D.S.*	Dapoli	Penn State	9/71-9/72	Entom.	---	Continuing grad. program at IARI
Bewli, I.S.	Poona	Penn State	1/71-12/73	Pl.Phys.	---	At Penn State
Chaugale, D.S.	Dapoli	Penn State	1/69-7/71	Agro.	Ph.D.	Prof. Bot. Konkan Ag. Univ. Dapoli
Chauhan, M.D.	Bombay	Wisconsin	9/71-9/73	Dairy Breeding	---	Returning to Bombay Vet. Coll. Konkan Ag. Univ.
Deb, R.N.	Nagpur ¹	Penn State	4/70-7/73	An.Sci.	Ph.D.	Prof., Nagpur Vet. Coll., Punjabrao Ag. University
Desai, S.N.	Poona	Penn State	4/70-6/73	Agro.	Ph.D.	Assist. Prof. Agron. Mahatma Phule Ag. Univ., Rahuri
Duduskar, R.S.*	Poona	Penn State	9/71-9/72	Dairy Tech.	---	Assoc. Dean, Kolhapur Ag. Coll. Mahatma Phule Ag. University
Dumbre, R.B.	Dapoli	Penn State	9/71-9/74	Ento.	---	At Penn State
Halli, I.P.	Dapoli	Penn State	4/70-9/72	Dairy Sci.	Ph.D.	Assoc. Prof. An. Sci., Konkan Ag. University, Kapoli
Harpase, D.G.*	Niphad ²	Penn State	9/71-9/72	Pl.Phys.	---	Continuing graduate program at IARI
Kale, A.M.*	Poona	Penn State	9/71-9/72	An.Sci.	---	Continuing graduate program at IARI
Mogal, B.H.	Poona	Penn State	1/71-12/73	Ento.	---	At Penn State
Hoghe, P.G.	Nagpur	Penn State	9/71-9/74	Pl.Path	---	At Penn State
Nikhade, D.M.*	Akola	Penn State	9/71-11/71	Agr. Ext.	---	Assist. Prof., Akola Ag. Coll. Punjabrao Ag. University

Table 3 cont'd

Name	Home College	U.S. Univ. Attended	Dates Attended	Field Study	Degree Obtained	Position & Location - 6/30/73
Pandit, R.V.	Nagpur ¹	Univ.Penna.	9/70-9/73	Vet.Sci.	---	Punjabrao Ag. University Nagpur Vet. College
Patil, B.B.*	Rahuri	Penn State	9/71-9/72	Agro.	---	Continuing graduate program at IARI
Patil, J.G.*	Akola	Penn State	1/71-1/72	Agr. Ext.	---	Continuing graduate program at IARI
Patil, P.L.	Kolhapur	Penn State	1/69-7/71	Pl.Path.	---	Assist. Prof. Pl. Pathology Poona Ag. Coll., Mahatma Phule Ag. University
Patil, R.G.*	Kolhapur	Penn State	9/71-9/72	Agr. Eco.	---	Continuing graduate program at IARI
Patil-Kulkarni, V.G.	Bombay ¹	Univ.Flr.	1/71-12/73	Vet.Sci.	---	Bombay Vet. College Konkan Ag. University
Radke, S.G.	Nagpur	Penn State	1/69-8/71	Ento.	Ph.D.	Assoc. Professor Ent. Punjabrao Ag. Univ. Akola
Rane, D.A.	Poona	Penn State	1/70-12/72	Hort.	Ph.D.	Assist. Prof., Hort. Mahatma Phule Ag. Univ., Rahuri
Salvi, P.V.	Poona	Cornell Univ.	2/69-9/71	Ext. Ed.	Ph.D.	Assoc. Dean, Dapoli Agr. Coll. Konkan Univ.
Sawant, D.S.	Kolhapur	Penn State	1/70-9/72	Ag. Eng.	Ph.D.	Assist. Professor Agr. Engin. Mahatma Phule Ag. Univ. Rahuri
Shinde, P.A.	Poona	Penn State	1/70-12/72	Pl.Path.	Ph.D.	Prof. Pl.Path., Poona Ag. Coll. Mahatma Phule Ag. Univ.
Sinnarkar, N.P.*	Parbhani	Penn State	4/71-9/72	Agr. Ext.	---	Continuing graduate program at IARI
Somawanshi, R.B.*	Dhulia	Penn State	9/71-9/72	Agro.	---	Continuing graduate program at IARI
Thakare, H.S.	Akola	Penn State	1/70-12/72	Ento.	Ph.D.	Assist. Prof. Ent., Akola Ag. Ag. Coll., Punjabrao Ag. Univ.

* Joint-Participants; ¹Veterinary College; ²Research Station