Appendix A

Agricultural Universities in India - Progress and Problems

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The Agricultural Division of the National Association of State Universities
and Land Grant Colleges
at Washington on November 12, 1968

Dr. Myer, Ladies and Gentlemen:

In this address I propose to give you a short history of the Agricultural Universities in India, the progress they have made, and the problems they are currently facing. When India attained independence in 1947, there were 17 agricultural and veterinary colleges. While these colleges were largely responsible for training agricultural graduates, the State Departments of Agriculture and Community Development executed the programmes of research and extension. The relationship between agricultural colleges and research departments was not close enough to ensure maximum utilization of findings of research.

Although higher agricultural education was extremely costly and the resources available were limited, a large number of new agricultural colleges sprang up during early post-independence period under pressure of regional interests. The number of agriculture/veterinary colleges almost doubled during the period 1953 to 1960. There are at present 92 agricultural and animal science colleges in the country, 50 of which offer post-graduate courses. Their total enrollment is of the order of 13,500 per annum of which about 2,000 enter post graduate institutions each year. This rapid multiplication of agricultural colleges affiliated to traditional universities in spite of inadequate financial support led to a certain degree in the sliding down in standards of education and soon became a serious problem.

Accordingly, the pace of progress remained slow and production technology

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developed at these institutions did not keep pace with the fast changing requirements of our agriculture.

Moreover, this expansion took place along the traditional pattern. It was not oriented to meet the needs of economic progress and change that was overtaking the country. It was soon realized that both the system of education as well as the set up of the institutions in the field of agriculture and animal sciences needed to be reorganized if it was to serve as an effective vehicle of agricultural progress and development. This necessitated a re-examination of the existing system of agricultural education. Recognizing the weakness of the then existing educational system and the need for linking programmes of agricultural education closely with production programmes, the University Education Commission (1948) headed by Dr. S. Radhakrishnan suggested the establishment of 'Rural Universities'.

The birth of the idea of Agricultural universities, however, can be traced to the First Joint Indo-American Team which was set up on the advice of Dr. Frank W. Parker, who was T.C.M. Advisor to the Ministry of Food and Agriculture, Government of India. The report submitted by the Team in September, 1955, laid the foundation of the scheme. The Second Joint Indo-American Team set up on 12 September, 1959 was headed by me as Vice President of the Indian Council of Agricultural Research. It had three representatives of American Land-Grant Universities, viz. Dean Arthur D. Weber, Dean A. E. Darlow and Dean Arthur L. Deering, and Dr. Martin G. Weiss representing the U. S. Department of Agriculture. The Indian members of the Team were Dr. B. N. Uppal, Dr. L. Sahai, Mr. Lal Singh, Mr. P. D. Nair, Dr. M. D. Patel, Dr. K. C. Naik, (Secretary) Dr. J. S. Patel, and Mr. Ibne Ali. The Team submitted its report on July 11, 1960, and recorded that there was widespread demand from many states for the establishment of agricultural universities. The Team recommended that assistance in establishment of an agricultural university should only be granted when there was adherence to basic principles such as (1) autonomous status, (2) location of Agricultural, Veterinary Animal

Husbandry, Home Science, Technological and Science Colleges on the same campus, (3) integration of teaching by offering courses in any of these institutions to provide a composite course, and (4) integration of education, research and extension.

The work of this Team was greatly facilitated by a blueprint on agricultural universities which was prepared by Dean H. W. Hannah in 1956. The contribution made by Dean Hannah to this scheme while he was living at Terai Farm, which had been reclaimed from a marsh and scrub forest, is basic. On the basis of this blueprint, the Uttar Pradesh Government submitted a proposal to the Government of India in September, 1956 to establish an agricultural university at Rudrapur in Terai, now called Pantnagar. The Government of India approached the problem in a cautious manner and agreed to the setting up of the agricultural university in Terai as an experimental measure in the Second Five-Year Plan. However, there was demand from many more states for such universities, and in 1961 the Government of India accepted the need for a few more such universities during the Third Plan period and suggested that the existing colleges or institutions which had strong departments for teaching and research should serve as nuclei for such universities.

Since 1960, nine Agricultural Universities have come into existence in the States of Andhra Pradesh, Madhya Pradesh, Mysore, Orissa, Punjab, Rajasthan, U.P. and West Bengal, and more are likely to come up during the Fourth Plan period.

The development patterns as also the functions and responsibilities delegated to these Universities, however, have varied from State to State and in some cases do not strictly conform to the central concept behind this institution building process as laid down in the Model Act for Agricultural Universities. Transfer of Statewide agricultural research, education and extension to the Agricultural Universities is the first requisite if the objective of integration is to be achieved and these institutions are to make their contribution on the agricultural production of a State. It is our hope that this situation would be soon corrected

in the interest of agricultural development and the reorganized system of agricultural education would meet with the same success in this country as the Land Grant Colleges system in the U.S.A. from which we have borrowed heavily in developing this new pattern.

Cummings' Committee Report

In 1960 the Government of India appointed a committee headed by Dr. Ralph W. Cummings to advise the State Governments on the legislation for the establishment of agricultural universities. The main idea was that the new agricultural universities should have the essential features that characterize the system and that they have a uniform base to carry over the functions with which they were charged. The report of the Committee published in 1962 spelled out the distinctive features of the agricultural universities as compared to the existing universities and provided guidelines for their development. On the recommendations made by this Committee, the Indian Council of Agricultural Research developed a model act which could be adopted with such changes as were necessary by the newly developing agricultural universities. This is an important milestone in the development of these universities for which Dr. Cummings and his colleagues deserve much credit.

Relationship of Indian Agricultural Universities with the U. S. Land Grant Universities

The T.C.M., now A.I.D., program that started in India in 1955, was on a regional basis for agricultural education. The trend to one Agricultural University for each state took shape in 1960 and all AID support has been on a state basis since 1963. There are at present eight Agricultural Universities being assisted by the Agency for International Development through six U. S. Land Grant Institutions. This university to university relationship is the bridge to scientific and cultural understanding between two great democracies.

These relationships are: Uttar Pradesh Agricultural University and the Uni-

versity of Illinois, Punjab Agricultural University and the Ohio State University, Andhra Pradesh Agricultural University and Kansas State University, University of Udaipur and the Ohio State University, Jawaharlal Nehru Krishi Vishwa Vidvalaya and the University of Illinois, Orissa University of Agriculture and Technology and the University of Missouri, Mysore University of Agricultural Sciences and the University of Tennessee, and Maharashtra Agricultural University and Pennsylvania State University.

Through USAID and these U. S. Universities, assistance has been given for training Indian Agricultural University's faculties. At present there are 4,500 returned participants from AID programs and over one-fourth have been related to agriculture, veterinary medicine, engineering and home science.

Specialists from the U. S. Universities serving with Indian counterparts have been and are serving in teaching, research and extension education. At present, the U. S. teams are nearly at full strength in India. Their impact is real and most welcome.

Other AID assistance has included limited amounts of equipment for teaching and research. All of these inputs - participants, specialists and equipment have aided the Indian Agricultural Universities to become real centers of new ideas and practices for India's agriculture.

U. P. Agricultural University, Pantnagar

The first agricultural university was started at Pantnagar on a 12,000 acre farm in 1960. The University has four constituent colleges, namely those of agriculture, veterinary medicine, engineering and technology, and basic science and humanities. The college of home science is planned for inauguration next year.

Punjab Agricultural University, Ludhiana

The next university to follow was the Punjab Agricultural University at Ludhiana in October, 1962. As I have been associated with this institution since its

very birth, it would be relevant to give a few details. On account of partition of India on 15 August, 1947, the famous Lyallpur Agricultural College fell to the share of Pakistan. The refugee farmers of Ludhiana, who mostly came from Lyallpur Canal Colony were conversant with the benefits of an agricultural college and they vacated a school building to house the agricultural college. I was then Director General of Rehabilitation, rehabilitating rural refugees from West Pakistan in India. I allotted about 1,000 acres of land in an evacuee village for the college. By 1955 a modern college building was already under construction for the college of agriculture. In 1962, largely due to the interest taken by the Chief Minister, Shri Pratap Singh Kairon, who was keenly interested in agricultural development, Ludhiana was selected for the second agricultural university. Due to the dedicated efforts of the first Vice Chancellor and the enthusiastic support of the Chief Minister, Mr. Kairon, the University made rapid progress. Apart from the college of agriculture, a college for basic sciences, a home science college and an engineering college have been started.

University of Udaipur, Udaipur

In 1962, an agricultural university was established in Udaipur. To this University was affiliated the college of agriculture at Udaipur and Jobner and the veterinary college at Bikaner. Subsequently, college of agricultural engineering and home science were added, and an existing college in basic science and humanities was added as a constituent unit. This University, however, will be entrusted with the responsibility for agricultural research in the state in the Fourth Plan period.

Orissa University of Agricultural Sciences and Technology, Bhubaneswar

The University began to operate from February 1963, having taken over the State colleges of agriculture and veterinary science. The college of basic sciences and humanities was added in 1964 and a college of agricultural engineering in 1966. With the addition of a college of home science within the next few years

the complex of essential units of the agricultural universities would be complete. This University has partly taken up the responsibility of agricultural research from the State Department of Agriculture.

Andhra Pradesh Agricultural University, Hyderabad

The Andhra Pradesh Agricultural University was established in June 1964. It took over the three existing agricultural colleges, two veterinary colleges and a home science college. A new college of basic science and humanities has been added while a college of agricultural engineering is expected to be started. The State Government has transferred research responsibility to the University in 1966 along with staff and 6,000 acres of land and laboratories.

Mysore University of Agricultural Sciences, Bangalore

The Mysore University of Agricultural Sciences located at Bangalore commenced operating from October 1965 with the transfer of the two State agricultural colleges and a veterinary college. The long range plan of the university includes the establishment of new colleges of basic science and humanities, fisheries, agricultural engineering, forestry, home science, dairying and horticulture. Most of the research organization of the State Government has been transferred to the university along with 3,000 acres of land in the experimental stations. As in several other universities, the extension activities are mainly the organization of refresher courses for State Government extension workers though direct extension work is also in progress around the campus.

The University of Kalyani, Kalyani

The University of Kalyani was established in 1960 with faculties of arts, sciences and education. It was recognized as an agricultural university in 1965. This University has still to assume the responsibility of agricultural research and extension education from the Department of Agriculture of the State Government.

Maharashtra Agricultural University, Rahuri

Maharashtra Agricultural University was inaugurated in March 1968. It con-

sists of eight state agricultural colleges and two veterinary colleges in addition to two affiliated private agricultural colleges. The central university campus is proposed to be built at Rahuri. The University would soon have the statewide research responsibility.

Contributions of Agricultural Universities to Agricultural Production

The concept of integration of teaching, research and extension has already proved its worth through remarkable progress made in the field of agricultural education, research and extension by the new Agricultural Universities. There is perceptible improvement in the quality of education. There are more competent teachers, better equipped libraries, laboratories, and farms. The internal examination system is geared for continuous preparation on the part of both the students and the teachers.

These institutions are largely responsible for the development of the high-yielding varieties of wheat, maize, bajra and jowar. Unprecedented high crop yields have been recorded. Agronomic and plant protection practices to exploit maximum yield potentials have been developed and effectively extended to the farms. These institutions today are serving as fountain heads of new knowledge earned through purposeful, problem-solving research and have become main centers of dissemination of useful knowledge to farming community. Some of the best training for farmers is offered by the Agricultural Universities. There are numerous functional specialists who have gained confidence through experience in successfully applying scientific knowledge to the solution of practical problems.

The working conditions and incentives that they offer to the faculty and the students are providing opportunities for productive work, and are fostering team spirit and a healthy change in the outlook of all -- the teachers and the researchers, and the government administration. They are winning the confidence of the farmers. They have assumed leadership in science, education and extension. Their direct

contribution to programmes like pedigree seed production, fertilizer use and National Crop Demonstrations is highly impressive. In this connection, the inter-institutional collaboration within the country and the international collaboration with the U. S. Universities needs special mention. Agricultural Universities are participating most effectively in the execution of the various coordinated programmes of agricultural research initiated by the ICAR. Collaboration with U. S. Universities is aimed principally for advanced training of University personnel at institutions of repute in the U. S. and securing subject-matter specialists on long or short term basis for helping to raise the standards of teaching and research at these institutions.

Besides improvement in quality, the new system of education has reduced the 'wastage' in higher education. This not only saves cost but provides training opportunities for more students.

It will not be out of place to quote some of the specific contributions made by the Agricultural Universities. The soybean projects operating at the U. P. Agricultural University, Pantnagar and Jawaharlal Nehru Agricultural University, Jabalpur, have demonstrated that a number of soybean varieties are highly adapted to these areas and the crop can be grown successfully. Introduction of sugar beets in the eastern region of the U. P. is another example of a new crop having been adapted successfully in the region. The U. P., Punjab and Andhra Pradesh Agricultural Universities have already made significant contributions in the cereal improvement programs coordinated by the Indian Council of Agricultural Research in cooperation with The Rockefeller Foundation. In the field of extension, there the Tungbhandra fertilizer use project executed by the University of Agricultural Sciences, Mysore, is an outstanding example of how new varieties of crops and agronomic practices can be speedily spread among the farming communities. The University took up the development of intensive farming in 10,000 acres of any irrigated land under the project with the assistance from OXFOM and the USAID. The

project has been highly successful. The College of Engineering of the Punjab Agricultural University which has received considerable support from the Ford Foundation has provided much needed technical guidance to private companies which are now engaged in the manufacture of agricultural implements such as fertilizers-cum-seed drills, threshers, water-lift pumps, sprayers and dusters.

The Punjab State is known for its progressive farmers. An ambitious scheme of rural electrification has been taken up and private tube wells at the rate of 20,000 per year are being energized. In the utilization of ground water, this is a major development. No doubt, the drought of 1965-66 has been the major stimulus in ground water utilization. The spread of high-yielding varieties of wheat developed at the University has been rapid and there is now adequate seed to cover entire irrigated areas in this state.

In the field of animal sciences the technique of preserving semen in coconut milk medium has enabled long distance transport of semen in the states of Mysore, Uttar Pradesh and Andhra Pradesh. The poultry feed projects of the PAU and University of Udaipur as well as the animal cross-breeding project of the PAU are other noteworthy examples.

The Report of the Education Commission 1964-66

The impact which the scheme of agricultural universities has made on policy makers is evident from the report of the Education Commission (1964-66) headed by Dr. D. S. Kothari, the Chairman of the University Grants Commission. The Commission had recommended the establishment of at least one agricultural university in each state. They have further recommended that all aspects of research on agriculture should be the concern of the agricultural universities. Implementation of these recommendations would further enlarge the area under the control of these universities. It would lead to the integration of teaching, research, and extension education where it does not exist at present. That an agricultural university provides a better environment for research than a State Department of Agriculture,

however, is still to be realized in a number of states, where vested interests which believe in holding on to what you possess are still strong.

Employment of Agricultural Scientists

The scheme of intensive agriculture provided employment to a large number of agricultural graduates. The fertilizer and agro-chemical industries which are now developing at a fast rate have also provided a new field of employment. However, there is need for making plans for the absorption of agricultural engineers by developing schemes for soil conservation and irrigation. There is already large scale unemployment among civil engineers in India and there is an apprehension that unless steps are taken now to find new avenues of employment for the agricultural engineers, a similar situation may arise in this field.

So far as agricultural graduates are concerned, some of them will be returning to their own farms for work rather than relying on government jobs. This is mainly due to the fact that only in the last two or three years, due to assured remunerative prices for cereal crops, agriculture for the first time in the history of India has become a paying profession. With the acceleration of rural electrification schemes which are closely connected with tube well programs for utilization of ground water, there is every possibility of a number of young men returning to their farms, linked with it is the need for large scale programs for rural roads. In the State of Punjab an ambitious programme of rural link roads has already been taken up. Rural electrification coupled with assured remunerative prices for the crops would insure absorption of increasing number of young men on their own farms.

Examples of areas where the agricultural graduates have been leaders and where leadership will continue to expand are in seeds, pesticides, fertilizers, credit and other agro-business enterprises. For instance, the use of pesticides application have increased over seven times since 1961, nitrogen over four times and phosphorous by five times. Many other examples could be used but time does not permit.

Association of Indian Agricultural Universities

An Association of Agricultural Universities has been formed and registered and, it is hoped, will soon start functioning. It is expected to play a key role in the development of Agricultural Universities in India on the same lines as the National Association of State Universities and Land Grant Colleges of the U.S.A. We intend to draw liberally from your experience in this field and count on your guidance and support.

Summing up, there are nine Agricultural Universities, out of which eight have sisterhood relationships with six U. S. Land Grant Institutions. There is likelihood of three to four more agricultural universities coming up in the next few years. The eight Agricultural Universities which have cooperation with the U. S. Universities, have 63 colleges in all. Out of these there are 25 colleges of agriculture, 11 of veterinary medicine, 8 of engineering, 8 of basic sciences, and 7 of home science. These institutions are in various stages of development. Transfer of agricultural research on statewide basis to the remaining agricultural universities is an urgent necessity. The necessity of establishing faculties of basic sciences and humanities as part of agricultural universities is yet to be realized. Wherever they have been established, they have strengthened programs of education in agricultural sciences and have stimulated basic research. That all this has happened during a period of eight years is a creditable achievement and attributable to Indo-American cooperation. In fact, it is in the field of agricultural education and research that the contribution of the U.S.A. has been most effective and useful. The U. S. Government and the Rockefeller and Ford Foundations have generously suppoeted this new development by providing technical assistance in the form of specialists and equipment as well as training of faculty members of Indian Agricultural Universities at U. S. institutions, for which India is highly grateful.