

PN-ABI-962
73090

812
IV
630.711

AGRICULTURAL UNIVERSITIES IN INDIA

BY

ROLAND R. RENNE

Agricultural Universities in India

IN
630.711 Illinois Univ.
R414 Agricultural Universities in India.
Roland R. Renne. Dec. 1974.
34 p.
AID/CM/Asia-G-73-16.

1. Universities and colleges - IN. 2. Agricultural colleges - IN. I. Renne, Roland R. II. Contract. III. Title.

December, 1974

CONTENTS

	Page
Preface	ii
An Overview	1
Growth of the Nine Assisted Indian Agricultural Universities	3
Campus, Research, Farm, and Financial Resources of the Universities	14
Information Profiles of the Nine U.S.-Assisted Indian Agricultural Universities, in the Order of Their Establishment	20
Information Profiles of the Eleven Non-U.S. Assisted Indian Agricultural Universities, in the Order of Their Official Opening	30
Conclusions	34

AGRICULTURAL UNIVERSITIES IN INDIA

PREFACE

For nearly two decades (1956-1973), six U.S. land-grant universities, with financial assistance from AID, helped India improve her agricultural and veterinary colleges and establish nine new agricultural universities. The six U.S. universities were the University of Illinois, Kansas State University, University of Missouri, Ohio State University, Pennsylvania State University, and the University of Tennessee.

In 1964, these six universities formed the Council of United States Universities for Rural Development in India (CUSURDI) in order to better coordinate their technical assistance efforts. Nine years later, when the work of the six universities in India was terminated, CUSURDI received a grant from AID to write and publish the story of the U.S.-India partnership in improving Indian agricultural colleges and universities.

CUSURDI asked the University of Illinois to assume primary leadership for the publication, and Hadley Read, head of the University's office of agricultural communications, was named principal author. Helen Ayers, O.J. Scoville, and I served as collaborators on the project. In November, 1974, the University of Illinois published the story in a book titled "Partners With India: Building Agricultural Universities."

As one of the book's collaborators, I was asked to obtain and interpret the data on the growth and development of the nine Indian agricultural universities that were established during the partnership years of the six U.S. land-grant universities. I was also asked to obtain similar information for the other eleven agricultural universities established more recently.

I was assisted in this assignment by Dr. Arjan Singh of New Delhi, India, who for a number of years was employed by the USAID Mission in India. I am indebted to him for his thoroughness in helping to secure and check the data for accuracy and completeness.

Since the published book could contain only summary data relating to the growth of the Indian agricultural universities, the project leaders at the University of Illinois requested that I present more comprehensive data, with appropriate interpretation, in this supplemental report which is being made available to the CUSURDI universities, AID-Washington, the Indian Council of Agricultural Research, and the Indian universities.

The report is based in part upon the data obtained by Dr. Singh and in part upon my personal observations and information obtained during my 41 months in India. It was my privilege to serve 25 months as Chief of Party for the University of Illinois team at the Uttar Pradesh Agricultural University, Pant Nagar, from August 1, 1969 to September 1, 1971, and as Chief of the Agricultural Universities Development Division of the USAID Mission, New Delhi, from September 1, 1971 to January 1, 1973.

Roland R. Renne*

Montana State University

Bozeman, Montana

** Associate Dean of Agriculture and Professor of Agricultural Economics University of Illinois, Urbana-Champaign, May 16, 1969 through February 28, 1974; since March 1, 1974, President Emeritus and Director, Foreign Trade Study, Department of Agricultural Economics, Montana State University, Bozeman, Montana.

AGRICULTURAL UNIVERSITIES IN INDIA

An Overview

India now has 20 agricultural universities patterned after the land-grant agricultural universities of the U.S., i.e. an integrated program of teaching, research, and extension education services in agriculture, technology, and supporting fields. The first Indian agricultural university established was Uttar Pradesh Agricultural University, now named G.B. Pant University of Agriculture and Technology in northwest India, which officially began operations November 17, 1960, only 14 years ago.

Today, some 33,000 students attend these 20 universities of which about 28,000 are undergraduates and nearly 5,000 are post-graduate students. The faculties number more than 8,000 staff members, of whom approximately 1,450 or one-sixth have Ph.D. degrees, 5,300 or two-thirds have master's degrees, and the remaining one-sixth have bachelor's degrees. Nearly 600 of the staff members hold advanced degrees from U.S. universities.

Current research projects of the 20 universities total more than 1,600 and more than 300 research stations are in operation. There are nearly 200 extension specialists operating at the college level, and over 400 specialists advising farmers and rural people at the district level. These developments give some quantitative measures of the efforts being made to improve Indian agriculture and the living of rural people through establishment and operation of U.S. land grant type agricultural universities.

The six U.S. universities working in India--University of Illinois, Kansas State University, University of Missouri, Ohio State University, Pennsylvania State University, and University of Tennessee spent almost

\$42 million of AID-approved funds. Of this amount, \$31 million was in U.S. dollars and \$11 million was the dollar equivalent of U.S.-owned rupees generated by the sale of wheat and other commodities to India and earmarked for use in assisting India's development programs. The cost of this technical assistance, including the participant training program and books and supplies, amounted to less than four-tenths of one percent of the more than \$10 billion in total U.S. aid to India during this period.

As would be expected, the progress made by the nine India agricultural universities which were assisted by the six U.S. universities, varied considerably due to a combination of factors affecting each institution. However, with less than two decades of operation, much progress has been made, as the discussion, tables, and information profiles will indicate. In addition to the nine U.S.-assisted agricultural universities, ten more agricultural universities are now operating and an eleventh has been authorized and plans to begin operations this year. No state in India has more than one agricultural university except Maharashtra, which has four.

Gulam Sadique University of Agriculture in Jammu-Kashmir state in the north is the latest to be established. In February 1974, an officer to head the institution was appointed and the university was expected to be in operation for the 1974-75 academic year.

The tables and information profiles which follow will help the reader to get a picture of the growth and progress being made by the agricultural universities in India through their teaching, research, and extension education programs.

GROWTH OF THE NINE U.S.-ASSISTED INDIA AGRICULTURAL UNIVERSITIES

The nine agricultural universities assisted by USAID through contracts with the six U.S. land grant universities, account for more than 23,000 of the some 33,000 students attending Indian agricultural universities, or approximately seventy percent of the total. The nine assisted universities have about four-fifths of the professional staffs of all Indian agricultural universities, so that the student-staff member ratio is somewhat lower for the U.S.-assisted than the non-assisted Indian agricultural universities. Also, the nine assisted universities have 85 percent of the Ph.D. degree staff members of all the agricultural universities, approximately three-fourths of the master's degree staff, but only about half of the total staff members whose highest degree is the bachelor's. Of those having advanced degrees (beyond the bachelor's degree) from U.S. universities, the nine U.S.-assisted universities have nearly nine-tenths of the total. This reflects, in part, the effects of the participant training program of the USAID program of financing graduate work in the U.S. for staff members of the assisted Indian agricultural universities. (See Tables 1 and 2).

The nine assisted agricultural universities have a total of 721,000 volumes in their libraries, compared with less than 400,000 volumes for the eleven non-assisted agricultural universities. This again reflects the effects of the USAID support program, which provided considerable sums to the nine assisted universities to purchase books and periodicals to build up their library resources.

All but one of the nine assisted Indian agricultural universities have "earn-as-you-learn" programs, and all but one of the eight unassisted agricultural universities that furnished information on this subject had "earn-as-you-learn" programs. Udaipur University in Rajasthan, of the nine

assisted institutions does not have such a program, and only Marathwada Agricultural University at Parbhani, Maharashtra, of the eight non-assisted universities that furnished information on this point, indicated that it does not have an "earn-as-you-learn" program for its students.

The nine assisted universities made significant progress during the period from their first full year of operation through the fiscal year 1973. The number of home campus colleges for the nine universities increased from 21 in their first full year of operation to 37 in 1973, while the number of all-campus or branch campuses decreased from 20 to 18 (See Table 3). The number of professional staff more than tripled from 2,015 to 6,507, while enrollments increased about two and a half times from 9,790 to 23,213. The number of staff members with Ph.D. degrees increased approximately fivefold, from 251 to 1,234, and the number with advanced degrees from the U.S. more than tripled from 140 to 486; the number with the master's degree as their highest degree increased nearly fourfold, from 1,095 to 4,073, while those holding only the bachelor's degree increased less than twofold, from 616 to 1,133 (See Table 3).

The number of degrees granted by the nine universities multiplied nearly two and a half times from 1,740 to 4,119 during their first decade of operations. The number of bachelor's degrees increased from 1,537 to 3,171 or slightly more than doubled; master's degrees more than quadrupled from 201 to 836; and Ph.D. degrees increased more than fiftyfold from 2 to 112 (See Table 3).

The amount spent for teaching, research, and extension education during these same years nearly tripled from \$7,634,000 to \$22,113,000 (using 7.6 rupees = one dollar). Expenditures for teaching increased 2.88 times, research 2.95 times, extension education increased 2.77 times (See Table 3). However,

undergraduate enrollment increased only 2 1/4 times, but post-graduate enrollment increased 5 1/2 times. Post-graduate instruction is considerably more expensive than undergraduate teaching, and accounts in significant part for the greater increase in teaching costs (2.88 times) than total enrollment increase, i.e., 2.37 times.

The largest numerical increase in enrollment during the period 1961-1973 occurred in agriculture, with 4,065 more students enrolled at the end of the period, or a total of 11,515 compared with 7,450 at the beginning. This is an increase of 55 percent. Enrollments on a percentage basis increased more than this in several other fields, but the numbers involved were much less than those in agriculture, which in 1973 accounted for approximately half (11,515) of the total student enrollment of 23,213 in the combined nine assisted universities, for all fields of instruction. All nine offered degrees in their colleges of agriculture from the beginning of their operations. This was not the case of any other colleges except veterinary medicine, which had only a 14 percent increase in enrollments from 2,075 students to 2,364 from their first full year of operation through fiscal year 1973.

In the case of technology (engineering) enrollments increased from 161 (140 students at GBPUAT and 21 at MPKVV) to 1,475 in 1973, an increase of 81 percent. Only seven of the nine universities offered degrees in technology (engineering) during the period (APAU at Hyderabad and HAU at Hissar did not offer degrees in this field).

Home science enrollments increased from 80 at APAU in 1965 to 866 enrolled in seven of the nine universities in 1973, or an increase of more than tenfold. Orissa University of Agriculture and Technology and MPKVV at Rahuri did not offer degrees in home science during the period.

In the case of basic sciences none of the nine universities offered degrees in this field in their early years. By 1973, five of the nine - GBPUAT, PAU, U.S., OUAT, and HAU offered degrees in basic sciences. Three of these five, GBPUAT, PAU, and U.S. offer both undergraduate and post-graduate degrees in basic sciences, while OUAT offers only undergraduate degrees and HAU offers only post-graduate degrees. The total enrollment of the five universities in basic sciences in 1973 was 6,269, with the University of Udaipur accounting for 5,338 or 85 percent of the total through its absorbing the large M.B. College of Arts and Sciences at Udaipur in 1965.

Other colleges of the nine agricultural universities offering degrees in other fields include JNKVV and MUAS, which offer undergraduate degrees in fisheries; a College of Law at Udaipur University, which offers both undergraduate and post-graduate degrees in law; and a College of Animal Science at Haryana Agricultural University at Hissar, which offers undergraduate and post-graduate degrees, and a College of Sports (physical education and athletics) which offers undergraduate degrees.

It is apparent from the above discussion and data that the nine assisted agricultural universities have been, in general, expanding their curricula offerings at both undergraduate and post-graduate levels. However, most of the nine have placed major emphasis upon five colleges - agriculture, veterinary medicine, technology (engineering), home science, and basic sciences, with only two offering undergraduate programs in fisheries, one offering both undergraduate and post-graduate programs in animal science, and a college of sports offering undergraduate degrees.

With the increasing number of post-graduate students in the agricultural universities - an increase of 5 1/2 fold in a decade - compared with an increase of slightly more than double for undergraduates in the same

decade, it was important that the basic sciences be strengthened significantly. Hence, the action of five of the nine assisted universities to offer degree programs in basic sciences and three of the five to offer both undergraduate and post-graduate degree programs. This follows very closely the action of land grant universities in the U.S., especially in the 22 states in which the state university and the land grant A & M institutions are separate, where a gradual process of strengthening the basic sciences in order to strengthen the applied science fields of agriculture, veterinary medicine, engineering, and home science, was undertaken by first offering undergraduate programs and later offering both undergraduate and post-graduate programs in basic sciences.

TABLE 1

STATUS OF U.S. ASSISTED INDIAN AGRICULTURAL UNIVERSITIES, 1973

ITEM	GBPUAT	PAU	APAU	JNKVV	U.U.	MUAS	OUAT	MPKVV	HAU	TOTAL
Home Campus Colleges*	5	5	3	5	5	3	4	1	6	37
Branch Campuses	0	0	4	6	2	3	0	3	0	18
Enrollment Undergrad.	720	1729	1765	1913	5933	1778	1202	2236	1189	19465
Enrollment Postgrad.	423	663	276	330	1085	259	204	227	281	3748
Enrollment Total	2143	2392	2041	2243	7018	2037	1406	2463	1470	23313
Professional Staff:										
Teaching	263	497	730	539	274	378	156	256	220	3413
Research	167	445	299	510	145	287	80	349	324	2606
Education Ext.	65	121	33	24	29	61	36	16	103	488
	495	1063	1063	1073	548	726	272	621	647	6507
Professional Staff:	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %
Bachelor's Degree	40 8	130 12	217 20	172 16	12 2	197 27	75 43	269 43	21 3	1133 17
Master's	281 57	629 59	779 74	773 72	338 62	412 57	161 59	304 49	396 61	4073 63
Ph.D.	172 35	304 29	66 6	128 12	182 33	110 15	18 7	41 7	213 33	1234 19
Other	2 -	-	-	-	16 3	7 1	18 7	7 1	17 3	67 1
										6507
U.S. Adv. Degrees	53 10.5	59 5.6	48 4.5	57 5.4	125 22.8	83 11.4	34 12.5	1 2	15 2.3	486 7.5
Library, No. of Vol.	122,000	94,522	73,207	25,959	191,306	61,115	77,000	13,500	62,195	720,804
Colleges Offering										
Bachelor's Degrees	5*	5*	3*	5*	8*	3*	4*	4*	5*	42*
Depts. Offering Master's	19	33	3	22	38	2	16	9	26	168
Depts. Offering Ph.D.'s	10	23	0	4	25	2	0	8	25	97
Earn-Learn Program	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	7-Yes, 2-No
Land Area, Campus**	588	400	699	7311	99	2455	129	790	776	13247
Land Area, Expt'l Work**	781	729	494	865	148	5088 ^{b/}	679 ^{b/}	1235	677	10696
Land Area, Farm**	10453	296	753	371	207	b	b	2766	1771	16617
Total Land Area	11822	1425	1946	8547	454	7543	808	4791	3224	40560

TABLE 1, Page 2

ITEM	GBPUAT	PAU	APAU	JNKVV	U. U.	MUAS	OUAT	MPKVV	HAU	TOTAL
India Research Project No.	26	29	12	57	27	35	17	26	26	255
India Research Project Funds***	263158	381580	565786	588263	947368	504474	292632	434210	392900	\$4637371
Univ. Research Project University Research Stations	219	145	91	NA	27	582	16	31	86	1197
Extension Specialists at College Level	3	11	40	23	6	32	6	31	9	161
Extension Specialists at District Level	9	10	17	35	19	4	19	10	9	132
Farmers Training at No. of Districts	54	120	43	24	12	36	12	0	72	373
Demonstrations No. of Districts	17	12	3	6	2	1	13	9	5	68
Total Districts in State	17	12	6	6	11	6	5	9	4	76
	54	12	21	6	26	19	13	26	10	187

*Undergraduate colleges

**Acres (converted from hectares at 2.47 acres = 1 hectare)

***Converted from rupees to dollars at rate of 7.6 rupees = one dollar

a/ Included in "Campus area"

b/ Experimental area and university farm combined

GBPUAT = G.B. Pant University of Agricultural Technology at Pantnagar, Uttar Pradesh

PAU = Punjab Agricultural University at Ludhiana

APAU = Andhra Pradesh Agricultural University at Hyderabad

U.U. = University of Udaipur, Udaipur, Rajasthan

MUAS = Mysore University of Agricultural Sciences at Bangalore

MPKVV = Mahatma Phule Agricultural University at Rahuri, Maharashtra

HAU = Haryana Agricultural University at Hissar

JNKVV = Jawaharlal Nehru Agricultural University at Japalpur, Madhya Pradesh

TABLE 2

STATUS OF U.S. NON-ASSISTED INDIAN AGRICULTURAL UNIVERSITIES, 1973*

ITEM	KALYANI	PUNJABRAO	KERALA	ASSAM	TAMIL NADU	KONKAN	MARATHWADA	GUJARAT	TOTAL
Home Campus Colleges	2	5	2	2	4	1	2	3	22
No. of Branch Campuses	0	2	1	1	0	3	0	5	12
Enrollment Undergrad.	504	488	144	662	1210	528	815	1572	6103
Enrollment Postgrad.	111	160	44	51	288	42	106	224	1026
Enrollment Total	615	648	188	713	1498	570	921	1796	6965
Professional Staff:									
Teaching	78	298	119	101	589	113	84	211	1593
Research	13	496	139	91	0	48	88	200	1075
Ext. Education	7	16	2	2	38	4	17	4	90
Total	98	810	260	194	627	165	189	415	2758
Professional Staff:									
Bachelor's Degree	0	409	50	20	138	49	54	249	969
Master's Degree	43	256	162	160	286	89	126	111	1233
Ph.D.	55	30	48	14	44	13	9	40	253
Other	0	0	0	0	159	151	189	6	505
U.S. Adv. Degree	9	15	0	0	10	10	1	28	73
Library:									
Volumes	36,000	45,435	22,000	16,752	84,190	18,452	14,000	63,044	299,873
Periodicals	470	650	2,500	0	581	2,485	308	7,689	14,683
Total	36,470	46,085	24,500	16,752	84,771	20,937	14,308	70,753	314,576
Depts. Offering Degrees									
Bachelor's	NA	16	NA	28	3	2	2	5**	56
Master's	NA	15	NA	16	9	3	1	4**	48
Ph.D.	NA	15	NA	0	7	2	0	4**	28
Total Departments	NA	16	NA	28	19	7	3	5**	78
Earn-Learn Program	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	
Campus (acres) ^{a/}	1248	NA	1978	100	1465	8151	99	2811b/	15852
Expt'al work (acres) ^{a/}	855	2964	----	112	873	----	291	8442	13537
Univ. Farm (acres) ^{a/}	519	8398	----	150	750	----	299	1144	11260
Total Land (acres) ^{a/}	2622	11,362	1978	362	3088	8151	689	12,397	40649

TABLE 2, Page 2

ITEM	KALAYNI	PUNJABRAO	KERALA	ASSAM	TAMIL NADU	KONKAN	MARATHWADA	GUJARAT	TOTAL
Univ. Research Program									
Current No. of Projects	43	Appx. 250	8	12	16	15	8	45	397
No. of Stations	9	16	22	12	16	13	8	55	151
Univ. Extension Program									
No. of Specialists at College Level	4	15	0	0	7	10	10	20	66
No. of Specialists at District Level	0	0	0	12	20	1	0	0	33
Scope of Service									
Statewide	-	-	Yes	Yes	Yes	-	-	-	
No. of Districts	2	8	-	-	-	3	5	-	

*Data for Himachel Pradesh University and Kajendra Agricultural University (Bihar State) were not received but estimates of staff, enrollments, etc. for these two universities were included in comparing the totals of the non-assisted Universities with the total of the U.S. assisted Universities. Gulam Sadiq University of Agriculture, Jammu-Kashmir State in North India, plans to begin operations in the 1974-75 academic year.

**Colleges

***Being acquired

a/Acres (converted from hectares at 2.47 = 1 hectare)

b/Includes 10/acres of residential area.

TABLE 3

PROFILE OF PROGRESS OF U.S. ASSISTED INDIAN AGRICULTURAL UNIVERSITIES
FIRST FULL YEAR OF OPERATION AND FOR 1973

ITEM	GBPUAT		FAU		APAU		JNKVV		U.U.		MUAS		OUAT		MPKVV		HAU		TOTAL	
	1961	1973	1964	1973	1965	1973	1965	1973	1963	1973	1965	1973	1963	1973	1970	1973	1971 ^e	1973	1st	1973
No. of Home Campus Coll.	3	5	2	5	3	3	2	5	3	5	2	3	2	4	1	1	3	6	21	37
No. of Branch Campuses	0	0	2	0	4	4	6	6	2	2	1	3	0	0	5	3	0	0	20	18
Professional Staff:																				
Instructors	1	52	24	361	184	497	257	403	49	21	134	355	19	14	228	157	100	216	996	2076
Asst. Professors	8	186	21	444	79	389	80	457	71 ^a	329	39	251	64	97	257	311	105	201	724	2665
Assoc. Professors	0	92	13	187	32	147	0	185	6	92	11	80	0	33	48	104	49	97	159	1017
Professors	0	30	3	39	5	24	9	23	23	23	11	31	5	3	4	31	28	35	88	239
Others	5	135	1	32	0	5	0	5	12	83	7	9	19 ^c	125	0	18	4 ^d	98	48	510
Total Staff	14	495	62	1063	300	1062	346	1073	161	548	202	726	107	272	537	621	286	647	2015	6507
Professional Staff:																				
Bachelor's Degree	2	40	18	130	158	217	0	172	44	11	75	197	26	75	276	269	17	21	616	1133
Master's Degree	6	281	39	629	120	779	282	773	99	338	92	412	77	161	209	304	171	396	1095	4073
Ph.D.	6	172	5	304	9	66	64	128	16	182	32	110	4	18	18	41	97	213	251	1234
Other Degrees	0	2	0	0	13	0	0	0	2	16	3	7	0	18	34	7	1	17	53	67
Total																			2015	6507
U.S. Adv. Degrees	2	52	10	59	24	48	17	57	25	125	32	83	8	34	0	13	22	15	140	486
Degrees Granted:																				
Bachelor of Science	0	321	230	352	409	457	23	286	197	576	0	285	178	195	433	582	67	117	1537	3171
Master of Science	0	116	65	134	21	77	0	119	18	144	0	35	18	55	78	88	1	25	201	836
Ph.D.	0	8	0	34	0	0	0	0	0	33	0	5	0	1	2	6	0	25	2	112
Total																			1740	4119
Amount Spent (000\$)																				
Teaching*	211	2189	250	2857	227	1900	987	1818	276	2526	291	467	195	-	1434	NA	650	1192	4521	12969
Research*	0	368	372	1472	-	1794	539	1237	b	1284	291	324	54	180	791	776	749	831	2796	8266
Off Campus Ext.																				
Ed.* TOTAL	0	0	75	410	1	119	22	71	b	b	55	76	19	NA	b	b	145	202	317	878
Enrollment**	211	2557	697	4739	228	3813	1548	3126	276	3810	637	887	263	180	2225	776	1544	2225	7634	22113
Undergrad.	770	1720	806	1729	2049	1765	579	1913	1050	5933	370	1778	872	1202	2292	2236	322	1189	9110	19465
Post-Grad.	64	423	175	633	0	276	119	330	40	1085	0	259	64	204	167	227	51	281	680	3748
Total	834	2143	941	2392	2049	2041	698	2243	1090	7018	370	2037	936	1406	2459	2463	373	1470	9790	23213
Enrollment by Colleges																				

TABLE 3, Page 2

ITEM		GBPUAT		PAU		APAU		JNKVV		U.U.		MUAS		OUAT		MPKVV		HAU		TOTAL	
		1961	1973	1964	1973	1965	1973	1965	1973	1963	1973	1965	1973	1963	1973	1970	1973	1971 ^e	1973	1st.	1973
		Years																			
Agriculture	Undergrad.	380	627	806	1010	1279	1320	491	1415	857	600	270	1311	629	546	2057	1922	75	702	6844	9453
	Graduate	64	319	175	327	0	210	107	251	40	217	0	207	64	142	145	199	11	190	606	2062
	Total																				7450
Vet. Med.	Undergrad.	250	272	-	121	690	314	88	335	193	160	100	257	243	133	214	240	247	189	2025	2021
	Graduate	-	41	-	31	-	56	12	70	-	-	-	52	-	31	22	28	16	34	50	343
	Total																			2075	2364
Tech. Engg.	Undergrad.	140	641	-	195	-	-	-	149	-	139	-	110	-	105	21	74	-	-	161	1413
	Graduate	-	8	-	23	-	-	-	-	-	-	-	-	-	31	-	-	-	-	-	62
	Total																			161	1475
Basic Sc.	Undergrad.	-	60	-	123	-	-	-	-	-	4484	-	-	-	418	-	-	-	-	-	5085
	Graduate	-	55	-	246	-	-	-	-	-	854	-	-	-	-	-	-	14	29	14	1184
	Total																			14	6269
Home Sc.	Undergrad.	-	120	-	280	80	131	-	-	-	112	-	30	-	-	-	-	-	138	80	811
	Graduate	-	-	-	36	-	10	-	9	-	-	-	-	-	-	-	-	-	-	-	55
	Total																			80	866
Fisheries	Undergrad.	-	-	-	-	-	-	-	14	-	-	-	70	-	-	-	-	-	-	-	84
	Graduate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total																			-	84
Law	Undergrad.	-	-	-	-	-	-	-	-	-	438	-	-	-	-	-	-	-	-	-	438
	Graduate	-	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	14
	Total																			-	452
Col. of Sports	Undergrad.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	-	54
	Graduate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total																			-	54
Animal Sc.	Undergrad.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	108	-	108
	Graduate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	136	10	136
	Total																			10	244

a Lecturers

b Included in teaching budget

c 17 Readers and 2 Deans

d Deans

e Prior to 1971 the college of Agriculture and Vet. Medicine at Hissar were part of Punjab Agricultural University. On Befruary 2, 1970, Haryana Agricultural University was established at Hissar officially. PAU records of enrollments, expenditures, etc., at Hissar for the years 1964-1970, were secured from PAU to show the 10-year record of operations at Hissar. Thus, the data for PAU are only for the campus at Ludhiana

* Converted to dollars from rupees at 7.6 rupees equal one dollar

** Enrollment data are for first full year of operations and for 1973.

CAMPUS, RESEARCH, FARM AND FINANCIAL RESOURCES
OF THE UNIVERSITIES

The amount of land and funds for campus, experimental research, and farm purposes varies widely among the universities. Campus acreage ranges from 7,311 acres for Jawaharlal Nehru Agricultural University at Jabalpur - which has five home campus colleges and six branch campuses in different locations in Madhya Pradesh State--the largest state in area in India - to 99 acres each at Udaipur University, and Marathwada Agricultural University. Other universities besides Jawaharlal Nehru Agricultural University which have more than 2,000 acres in their campuses are: Mysore University of Agricultural Sciences at Bangalore and Gujarat Agricultural University at Coimbatore, with 2,455 and 2,811 acres respectively.

Wide variations in acreage also occur for undertaking experimental research. Gujarat Agricultural University has over 8,400 acres, followed by Punjabrao Agricultural University in Maharashtra State with 2,964 acres. Those with the smallest acreages for experimental work are Assam Agricultural University with 112 acres and University of Udaipur with 148 acres.

The widest variation occurs in university farm acreages. G.B. Pant University of Agriculture and Technology at Pantnagar, has the largest area with more than 10,000 acres, followed by Punjabrao Agricultural University with nearly 8,400 acres. The smallest university farms are those at Assam Agricultural University and Udaipur University with 150 and 207 acres respectively. (See Tables 1 and 2).

The number of research stations vary from three for GBPUAT in U.P. State, to 55 for Gujarat Agricultural University in Gujarat State.

The number of extension specialists at the college level vary from none at Kerala, Maharashtra, and Assam Agricultural Universities to 35 at

JNKVV at Jabalpur. The number of specialists at the district level vary from none for five agricultural universities (Kalyani, Punjabrao, Kerala, Gujarat and Marathwada) to 54 for GBPUAT at Pantnagar in Uttar Pradesh, 72 for Haryana Agricultural University, Hissar, and 120 for Punjab Agricultural University at Ludhiana. (See Tables 1 and 2).

These wide variations in resources for campus, experimentation, and farm purposes are also apparent in other resources such as finances. Receipts and expenditures data for the ten years 1964-1973 were secured only for the nine U.S.-assisted agricultural universities.

Receipts for the decade for the nine institutions from all sources exceeded \$190 million, converting rupees into dollars on the basis of 7.6 rupees = \$1.00). More than half of this amount, over \$105 million, came from the nine state governments involved, and of the remaining \$85 million nearly half (\$40 million) came from the Central Government, \$28 million from university sources (student fees, university farm, and miscellaneous university sources), and the balance, nearly \$17 million, came from other sources, including scholarships, research projects, foundations, etc. (See Table 4).

Table 5 shows expenditures of the nine assisted agricultural universities for various purposes during the 1964-1973 decade. More than a third (\$60 million) of the total expenditures of \$176 million for the decade was spent on general operating costs of the universities, largely teaching staff salaries and employee wages, and supplies. Expenditures on research projects and off-campus extension programs are listed separately in the expenditures. It is interesting to note that four of the nine universities (GBPUAT at Pantnagar, Punjab Agricultural University, Andhra

Pradesh Agricultural University, and JNKVV at Jabalpur) each spent approximately \$10 1/2 million during the decade for general operations. Table 1 shows that these four institutions all had about the same enrollment of students--2,041 for APAU, 2,143 for GBPUAT, 2,243 for JNKVV and 2,392 students for PAU. Thus, the four universities were spending quite comparable amounts per student for general operating costs.

Mysore University of Agricultural Sciences at Bangalore shows a large item of \$10 1/2 million for miscellaneous expenses and less than one million dollars on general operating costs. MUAS has approximately the same number of students (2,037) as the other four and the cost per student would be quite similar if the miscellaneous expenses and general operation costs were combined. The Udaipur University has a large college of Arts and Sciences which accounts for its large enrollment of over 7,000 students, but its agricultural and engineering student enrollment totals less than a thousand (956), while the agricultural and engineering enrollments of the other five institutions mentioned are much higher, i.e.: GBPUAT, 1,595; PAU, 1555; APAU, 1,530; JNKVV, 1,810; and MUAS, 1,623.

The other three institutions included in Table 5 have not been in operation as agricultural universities during most of the decade 1964-1973, or, as in the case of Orissa University of Agriculture and Technology, detailed data were not available, and therefore, the data for these three are not fully comparable with the others.

Other items listed as expenditures vary much more than expenses for general operations, as is evident from Table 5. Expenses for books, furniture, and equipment are highest at GBPUAT with over 3 1/2 million dollars for the decade; with APAU second, with three-fourths as much, \$2 3/4 million; and PAU third with two-thirds as much, \$2 1/4 million; U.U.

fourth with slightly over \$2 million; and Haryana Agricultural University fifth with nearly \$2 million.

Expenditures for buildings vary from more than \$8 million at HAU, over \$7 million for PAU, and \$6 3/4 million for GBPUAT, to less than \$2 million each for JNKVV and U.U. Similarly, there is a wide range of expenditures for research projects, with PAU at the top with more than \$9 million to less than \$2 million at MUAS and GBPUAT.

Amounts spent for assistance and scholarships to students were highest at Haryana Agricultural University with nearly \$2 1/4 million, followed by PAU and GBPUAT with \$767,000 and \$606,000 respectively, to as low as \$55,000 at MUAS. PAU is highest in expenditures for off-campus extension programs with over \$2 million, followed by HAU with nearly \$1 million.

In total expenditures for the decade, Punjab Agricultural University exceeded \$32 million, followed by APAU at Hyderabad with \$25 1/2 million, GBPUAT, \$24 million, Haryana Agricultural University \$22 million, JNKVV and Udaipur \$19 million each, and MUAS at Bangalore \$17 million.

TABLE 4

RECEIPTS OF U.S. ASSISTED INDIAN AGRICULTURAL UNIVERSITIES FOR THE PERIOD 1964-1973
(FISCAL YEARS) CONVERTED TO DOLLARS (7.6 rupees = one dollar)
(000 DOLLARS)

SOURCE	GBPUAT	PAU	APAU*	JNKVV*	U.U.	MUAS**	QUAT	MPKVV***	HAU	MAJOR CATEGORY TOTALS
I. University Funds:										
Student Fees	701	599	696	418	1288	227	281	303	364	
University Farm	4020	886	1198	1937	614	1381	259	205	985	
Miscellaneous	3550	1746	2185	496	1181	288	1347	-	617	
Total Univ. Funds	8271	3231	4079	2851	3083	1896	1887	508	1966	27772
II. State Government:										
Operations	1603	17052	-	a	12456	8605	NA	905	8892	
Equip. & Buildings	5163	5198	16538	a	242	2374	NA	3933	7207	
Total State Funds	6766	22250	16538	10751	12698	10979	4736	4838	16099	105655
III. Central Government:										
Operations	-	2284	2799	3298	2701	1944	-	-	1208	
Equip. & Buildings	5564	4104	1907	2233	2108	3024	1685	1634	3261	
Total Central Gov't.	5564	6388	4706	5531	4809	4968	1685	1634	4469	39754
IV. Other Sources:										
Scholarships	615	754	24	b	-	-	816	170	348	
Research Schemes	1776	347	-	50	1566	-	765	1140	-	
Foundations	47	86	-	225	-	10	105	-	53	
Miscellaneous	276	388	89	27	881	241	-	5984	93	
Total Other Sources	2714	1575	113	302	2447	251	1686	7294	494	16876
V. Grand Total All Receipts	23315	33444	25436	19435	23037	18094	9994	14274	23028	190057

a No breakdown available

b Included in operations, Central Government Funds

*Nine years, 1965-1973

**Eight years, 1966-1973

***From 1970-1973

TABLE 5

EXPENDITURES OF U.S. ASSISTED INDIAN AGRICULTURAL UNIVERSITIES FOR THE DECADE 1964-1973 ^{1/}
(FISCAL YEARS)

(000 DOLLARS)

ITEM	GBPUAT	PAU	APAU	JNKVV	U.U.	MUAS	QUAT	MPKVV***	HAU	TOTAL
General Operations	10385	10504	10533	10526	12711	939	NA	905	3756	
Books, Furniture & Equip.	3534	2256	2786	1189	2076	1330	NA	885	1873	
Buildings	6756	7399	3275	1996	1880	2374	NA	5384	8657	
Research Projects	1819	9377	7994	4799	2627	1729	NA	2485	4581	
Assistance and Scholarships to Students	606	767	74	130	61	55	NA	170	2228	
Off Campus Ext. Programs	-	2167	348	351	1	241	NA	-	977	
Miscellaneous	672	-	539	423	2	10575	NA	-	64	
Grand Total	23772	32470	25549	19414**	19358	17243**	5938*	9829	22136	175709

^{1/} - In dollars, Conversion rate, 7.6 rupees = one dollar

* - No breakdown for items available.

** - Data available for 9 years only (1965-1973 inclusive)

*** - Four years only - Fiscal years 1970-1973 inclusive

INFORMATION PROFILES OF THE NINE U.S.-ASSISTED INDIAN AGRICULTURAL
UNIVERSITIES, IN THE ORDER OF THEIR ESTABLISHMENT

1. G.B. Pant University of Agriculture and Technology (GBPUAT), Pantnagar,
Uttar Pradesh

- (1) Date of enabling legislation: December 25, 1958
- (2) Date of official opening of University: November 17, 1960
- (3) Names and locations of constituent colleges at time of establishment:
 - (a) College of Agriculture
 - (b) College of Veterinary Medicine
 - (c) School of Basic Sciences and Humanities

All located at main campus, Pantnagar; original name was Uttar Pradesh Agricultural University.

In 1973: six colleges: Agriculture, Veterinary Medicine, Engineering, Basic Sciences and Humanities, Home Science, and Post-Graduate Studies, all at Pantnagar.

- (4) Names and location of research stations at time of establishment - University Research Station, Pantnagar. In 1973: Hill Research Station and Horticultural Research Station also operating.
- (5) Faculty: instructors, 52; assistant professors, 186; associate professors, 92; professors, 30; deans and directors; 6; others, 129; total 495.
- (6) Degrees held by staff: In 1973, there were: bachelors of science 40; master of science, 281; Ph.D., 172; others, 2; total, 495. Fifty-two staff members held advanced degrees from the U.S.
- (7) GBPUAT, the first agricultural university to become operative in India (November 1960), has had only three Vice Chancellors in over 13 years of operation. Mr. K.A.P. Stevenson served the first four years, Shri Bajrang Bahadue Singh Bhadri only a little over one year, and the present Vice Chancellor, Dr. D.P. Singh has served over eight years. Both Stevenson and Singh belonged to the Indian Administrative Service and were effective, experienced administrators. It is interesting to note that Punjab Agricultural University has had but two Vice Chancellors, Dr. P.N. Thapar and Dr. M.S. Randhawa, during its more than 12 years of operation, both of whom had long and successful periods of top administrative experience. These two universities are the best known institutions among India's agricultural universities and strong leadership has been a major factor in the success of both.

- (8) GBPUAT is unique in the role which the University Farm has played in the finances of the institution. In the decade 1963-64, through 1972-73, 304 lakhs of rupees from the farm's profits have been made available to the University for its operations, and in no year during the decade were any Central Government funds used by GBPUAT to cover operating expenses. The annual profits have varied considerably, but farm profits have been an important factor in GBPUAT's financing and, for the 10-year period, constituted more than one-sixth of the total income available to the University from all sources. The University Farm has been instrumental in the production of certified seeds of high yielding varieties for distribution throughout India.
- (9) Income to the University from all sources has shown a fairly constituent upward trend from 54 lakhs from 1963-64 to 294 lakhs or about 5 1/2 times as much as in 1972-73.* Receipts exceeded 200 lakhs for the first time in 1967-68, (205) and did not drop below 240 lakhs for any year since.
- (10) Costs of operation ("recurring expenditures") of the University have risen quite consistently each year from less than 14 lakhs in 1963-64 to 137 lakhs or about ten times as much in 1972-73. During the same period the number of undergraduates increased from 770 to 1,720, and post-graduates from 64 to 423. Expenditures for research increased from 2 lakhs to 28 lakhs or an increase of fourteenfold during the 10-year period, and scholarships increased from one lakh to 6 lakhs. Construction costs of new buildings during the decade amounted to 513 lakhs, with a low of 7 lakhs in 1965-66, and a high of 115 lakhs, in 1968-69. Building costs amounted to 81 lakhs in 1972-73. The total of all expenditures increased from 54 lakhs in 1963-64 to 296 lakhs in 1968-69, then dropped moderately to 240 lakhs in 1970-71, and then increased to 296 in 1972-73.
- (11) Enrollments at GBPUAT have steadily increased from 834 in the academic year 1964 to 2,143 in 1973. Of these totals 770 were undergraduates in 1964 and 1,720 in 1973. Each year of the decade has a larger undergraduate enrollment than the preceding year. The graduate enrollment was also nearly as consistently upward each year as the undergraduate. This is an indication of sound progress and quality performance by the University. Agricultural students comprised 44% of the total enrollment in 1973, technology, (engineering) 30%, and veterinary medicine 15%, with the remaining 11% in basic sciences and humanities, and home sciences, in which degrees were first offered more recently than in the other three colleges.

GBPUAT offered only bachelor of science degrees in its early years. Three master's degrees were awarded in 1965, all of them in agriculture. The first Ph.D. degrees were awarded in 1970. In 1972, a total of 15 Ph.D.'s and in 1973 six Ph.D.'s degrees were awarded in agriculture and in 1973 two in basic sciences and humanities. GBPUAT has insisted upon high quality staff in depth before offering Ph.D. degree programs.

*One Lakh = 1000,000 rupees.

2. Punjab Agricultural University, Ludhiana

- (1) Date of enabling legislation: October 12, 1961 (superseded by new act on April 12, 1970)
- (2) Date of official opening: October 17, 1962
- (3) Names and locations of constituent colleges at time of establishment: Hissar*; College of Agriculture, Basic Sciences & Humanities; Veterinary Medicine, Agricultural Engineering, and Home Science at main campus, Ludhiana
- (4) Research Stations included at time of establishment:
 - (a) Regional Research Station, Abahar
 - (b) Regional Research Station, Gurdaspur
 - (c) Regional Research Station, Kapurthala
 - (d) Regional Research Station, Jullunder
 - (e) Regional Research Station, Gurgaon*
 - (f) Regional Research Station, Palampur**
 - (g) Regional Research Station, Kulu**
- (5) In 1973, there were 963 professional employees comprising 361 instructors, 344 assistant professors, 187 associate professors, 39 professors, 5 deans and directors, and 27 assistants or other titles.
- (6) Ten of the 62 staff members in the first full year of operation of the University held advanced academic degrees (beyond the bachelor's degree) from the U.S. By 1973, this number had increased to 59.
- (7) During the decade 1964-73, PAU spent 36.80 lakhs of rupees on books and periodicals. This is almost exactly the same amount spent by GBPUAT to note that they have almost identical numbers of books and periodicals in their libraries, GBPUAT having 123,434 and PAU 122,789 in 1973.
- (8) Income to the University from all sources has shown a fairly consistent trend upward from 106 lakhs in 1963-64 to 453 lakhs in 1972-73. Receipts exceeded 200 lakhs for the first time in 1966-67 (211 lakhs), stayed fairly steady the next two years, then increased steadily during the four years 1969-70 to 1972-73 when the peak of 453 lakhs was reached. During the 10 year period when income from the university farm increased from less than one lakh in 1963-64 to nearly 18 lakhs in 1972-73.
- (9) Enrollments at PAU have steadily increased in about the same proportions as those at GBPUAT during the decade. Total enrollment for fiscal year, 1963-64 was 981, and for 1972-73 it reached 2,932, a net increase of 1,411. In every year the enrollment was larger than the preceding year. Post-graduate students increased from 175 in 1964 to 663 in 1973, and undergraduate students increased from 806 to 1,729. Agricultural students made up 56% of the student body in 1973; basic sciences and humanities majors, 15% home science students, 13% engineering (technology) students 9%; and veterinary science students, 7%.

*Transferred to Haryana Agricultural University, February 2, 1970.

**Transferred to Himachal Pradesh University, July 22, 1970.

Punjab Agricultural University awarded its first Ph.D. degree in 1966. In 1967, ten such degrees were awarded. In 1973, 34 such degrees were granted of which agriculture accounted for 25; basic science and humanities, eight; and veterinary medicine, one. Master's degrees increased from 65 (all in agriculture in 1964) to 183 in 1969, the highest number in any year in the university. In 1973, 168 master's degrees were awarded. PAU has developed a strong graduate program at the master's degree level in the basic sciences and humanities, as well as in the applied fields. The Ph.D. degree program is strong in agriculture and the basic sciences and humanities.

3. University of Udaipur, Udaipur, Rajasthan

- (1) Date of enabling legislation: June 6, 1962
- (2) Date of official opening of University: July 12, 1962

This university with the main campus at Udaipur has two other campuses: S.K.N. College of Agriculture at Jobner, and a College of Veterinary and Animal Sciences at Bikaner. No research stations were transferred to the University at the time of its establishment, but by 1973 the University had six research stations and 27 current research projects.

U.U. is the largest university of the nine U.S.-assisted Indian Agricultural Universities in student enrollment. In 1973, U.U. had over seven thousand students (7,018) or nearly one-third of the total student body of the nine universities (22,647). This large enrollment is principally due to absorbing the M.B. College of Arts and Sciences at Jdaipur in 1965 and a College of Law. Of the total 7,018 students at U.U. in 1973, 5,338 were enrolled in the College of Arts and Sciences, and an additional 452 in the College of Law. The total enrollment in agriculture in 1973 was 817 students, which is 80 students less than the 1964 enrollment. Enrollment in the College of Veterinary Medicine at Bikaner has also declined from 193 in 1964 to 160 in 1973.

A College of Technology was established in 1966 with a first-year enrollment of 134. Enrollment in 1973 was only slightly more - 139. A College of Home Science was established in 1967 with an opening enrollment of 21. This has increased to 112 students in 1973.

During the nine years 1965-1973 inclusive, the College of Arts and Sciences has more than doubled in enrollment, from 2,473 to 5,338, and the Law College has increased from 141 to 452. Thus, while the combined agricultural and engineering enrollments together are less today than in 1964, the basic sciences and humanities and law enrollments have more than doubled. U.U. is unique among the nine U.S.-assisted Indian agricultural universities in this regard. None of the other eight have a College of Law and none with such an overwhelming number of students in the liberal arts and sciences.

Whether U.U. can provide maximum effectiveness of resident teaching, research, and extension education in agriculture and technology to advance the agriculture and welfare of the farmers and villagers of the State of Rajasthan remains to be seen. To date, the struggle has been a difficult

one. However, since March 29, 1973, the University has been under new leadership with a very competent agricultural scientist, Dr. P.S. Lamba as Vice Chancellor. He holds master's and Ph.D. degrees from the University of Wisconsin in Genetics, Biometry and Agronomy, and was formerly Dean of Agriculture and Director of Research at Haryana Agricultural University at Hissar.

Table 5 shows that U.U., with an enrollment larger than GBPUAT, PAU, and APAU combined, had total expenditures in the decade, 1964-73 considerably less than any one of the three, and less than one-fourth the total expenditures of the three with a combined enrollment of nearly 500 less students than U.U.

4. Orissa University of Agricultural Technology, Bhubaneswar, Orissa

- (1) Date of enabling legislation: November 3, 1961 (Act repealed and replaced by November 1965 Act)
- (2) Date of official opening: August 24, 1962

This institution is authorized to provide statewide service in teaching, research, and extension education. At the time of its establishment, the home campus at Bhubaneswar consisted of two colleges: the College of Agriculture, and the College of Veterinary Sciences and Animal Science. Three research stations were included in the University - the Agricultural Research Station at Bhubaneswar, the Rice Research Sub-Station at Behrampur, and the Fice Research Sub-Station at Jeypore.

OUAT was the only one of the nine U.S.-assisted Indian agricultural universities for which we were unable to secure a breakdown of expenditures for various purposes. However, the total figure for all expenditures for the period 1964-72 inclusive (no 1973 data were procurable), shows that compared with the other eight institutions. OUAT is inadequately financed if it is to render the quantity, kinds, and quality of services the state of Orissa needs to improve its agricultural production and improve rural living. For example, total expenditures of the University for the nine years were less than \$6 million, and this was far below any of the other eight institutions, including MP Agricultural University at Rahuri that has been operating only four years - (1970-73 inclusive) - (See Table 5).

With this low expenditure, OUAT has had less funds per student than any of the other eight institutions, and less proportionately for research and extension education services (See Table 3).

Only 18 of the 254 professional staff at OUAT in 1973 had Ph.D. degrees. In 1963, four of a staff of 107 held such a degree, so that while the percentage holding a Ph.D. degree increased during the decade, it was a vary minor increase from 4 percent of the faculty to 7 percent.

It is apparent that considerably upgrading of staff and increased funds for operation, facilities, and equipment are needed to bring performance at OUAT more nearly in line with the average of the other eight U.S.-assisted Indian agricultural universities.

5. Jawaharlal Nehru Agricultural University, Jabalpur, Madhya Pradesh

- (1) Date of enabling legislation: May 16, 1963
- (2) Date of official opening: October 2, 1964

This institution has the largest number of branch campuses of any of the nine U.S.-assisted Indian agricultural universities, with six, in addition to the main campus at Jabalpur, which now has five colleges - Agriculture and Animal Husbandry, Veterinary Medicine, Technology (Engineering), Home Science, and Fisheries. The branch campuses are: Colleges of Agriculture at Raipur, Rewa, Gawlior, Indore, and Sehore, and the College of Veterinary Science and Animal Husbandry at Mhow. It has 23 research stations which were included at the time the University was established.

JNKVV has experienced large increases in both undergraduate and post-graduate enrollments in the nine years 1965-1973. The number of undergraduates increased from 579 to 1,913, and the post-graduates from 119 to 330 (See Tables 1 and 3). The professional staff has increased more than three-fold from 346 to 1,073. The number of staff members with Ph.D. degrees doubled from 64 to 128, and the number with master's degrees more than tripled from 282 to 883. The number of staff members with advanced degrees from the U.S. increased from 17 to 57.

Two new colleges were added to the home campus at Jabalpur in 1973. Those were Home Science and Fisheries, with beginning enrollments of nine and 14 students, respectively. Agriculture had the largest undergraduate enrollment with 1,415 students in 1973. In 1965, the agricultural enrollment was only about one-third as much (491). Veterinary medicine undergraduate enrollments increased from 88 students in 1965 to 335 in 1973, and technology (engineering) increased from 35 in 1968, when the first engineering students were accepted, to 335 in 1973.

Post-graduate work is offered in agriculture, veterinary medicine and home science, and post-graduates increased from 119 to 330 in 1973. The first post-graduate degrees (master's) were granted in 1966, with 116 in agriculture, and 16 in veterinary medicine. In 1973, the totals were 76 and 22, and 21 in technology, for a total of 119. The first Ph.D. degrees (4) were granted in agriculture in 1969, but only two more, one each in 1970 and 1971, or a total of only six, have been granted thus far.

6. Mysore University of Agricultural Sciences, Bangalore, Mysore

- (1) Date of enabling legislation: April 24, 1964
- (2) Date of official opening: August 21, 1964

This institution has the distinction of being the only one of the nine universities to have the same Vice Chancellor for the entire nine-year period, June 1964 to June 1973. Dr. K.C. Naik, author of "A History of Agricultural Universities," proved to be a competent leader and administrative and considerable progress was made at MUAS during these years.

In 1965, the first full year of operation of the University the enrollment was 370 undergraduate students. In 1973, enrollment was 2,037 students, of whom, 1,778 were undergraduates and 259 post-graduates. The professional staff during this period was increased from 202 to 726, the number holding master's degrees increased from 92 to 412, a more than four-fold increase; holders of Ph.D. degrees increased from 32 to 110, a more than threefold increase; and the number holding advanced U.S. degrees increased from 32 to 83.

No degrees were granted in 1965, but in 1973, 285 bachelors, 35 masters, and 5 Ph.D. degrees were granted. Amounts spent for teaching, research, and extension education increased modestly during the period.

In terms of overall financing, MUAS appears not to have had as liberal funds as several of the other nine, but more than some, so that MUAS stands about in the middle of the nine institutions. Overall performance and management has been good. Only in terms of the proportion of the professional staff holding the highest earned degree (Ph.D.) does MUAS fall below the average, having 15 percent of the staff holding Ph.D. degrees compared with the average of 19 percent for all nine institutions.

MUAS has 3 branch campuses - an agricultural college at Dharwar, a technical school at Raichur, and a College of Fisheries at Mangalore. There are three colleges on the home campus at Bangalore - Agriculture, Veterinary Science, and Basic Sciences and Humanities. A large research program is being carried out with 35 All India research projects financed by the Indian Council of Agricultural Research, and 582 University research projects. A total of 32 research stations are operated by the University. There are 36 extension specialists working at the district level and the scope of services is statewide.

7. Andhra Pradesh Agricultural University, Hyderabad

- (1) Date of enabling legislation: May 4, 1964
- (2) Date of official opening of University: March 20, 1965

In 1973, APAU had three colleges on the Rajindranager, Hyderabad campus i.e., Agriculture, Basic Science, and Veterinary Science; two branch agricultural colleges, one at Tirupati, and one at Bapatla; one veterinary science college at Tirupati; and one home science college at Saifabad, Hyderabad.

The professional staff of APAU has increased from 300 the first year of operation (1965) to 1,062 in 1973, or more than a threefold increase. The number holding master's degrees increased over sixfold from 120 to 779, and the number holding Ph.D. degrees increased over sevenfold, from nine to 66. The number holding advanced degrees from the U.S. doubled from 24 to 48.

At the same time, enrollment of undergraduates actually decreased from 2,049 in 1965 to 1,765 in 1973. Post-graduate enrollment, however, increased from none in 1965 to 276 in 1973. The first post-graduate students were enrolled in 1966 in the College of Agriculture, when 74 were accepted.

number grew to 210 in 1972, and remained the same in 1973. In 1968, the first veterinary science post-graduate students enrolled (28), and this number increased to 68 in 1970, but fell to 56 in 1973. In home science, the first post-graduates enrolled in 1970 were six, and in 1973 ten enrolled. APAU has not experienced major increases in enrollment during the decade of its operations as have most of the other U.S. assisted Indian agricultural universities (See Tables 1 and 3). APAU is the only university of the nine U.S.-assisted Indian agricultural universities that does not offer graduate work beyond the master's degree. It has the largest number of research stations (40) of any of the nine universities. No research stations were included at the time APAU was established, but in 1966-67 all the research stations in the state were transferred from the Department of Agriculture to APAU. In 1973, UPAU spent \$1,794,000 (136.38 lakhs) on research, which was the highest of any of the nine agricultural universities.

8. Mahatma Phule Agricultural University, Rahuri, Maharashtra

- (1) Date of enabling act: MAU Act of 1967 as amended January 8, 1969
- (2) Date of official opening of the University: October 20, 1969

This is the next to the youngest of the nine institutions and has been in operation only four years. At the time of its opening, colleges at five branch campuses were included in the University. These five were: Colleges of Agriculture at Poona, Dhulia, Kohlapur, and Dapoli; and the Veterinary Science College at Bombay. The home campus is located at at Rahuri and the College of Engineering is situated there.

At the same time, 43 research stations located in 12 districts of the State of Maharashtra were transferred to the University. During the first full year of operation, the professional staff totaled 537, and in 1973 the total had increased to 729, or nearly 200 more. The number of staff whose highest degree was a bachelor's degree decreased from 276 to 269, but those holding master's degrees increased nearly 100 from 209 to 305. The number holding Ph.D. degrees increased from 18 to 41, thus, the staff has been upgraded considerably.

Enrollment at MPKVV has increased very little. The undergraduate enrollment dropped slightly from 1970 through 1973 from 2,292 to 2,236, while the post-graduate enrollment increased more than one-third from 167 to 227. Degrees granted increased considerably, bachelor's degrees increasing by more than a third, master's degree increasing from 78 to 88, and Ph.D. degrees increasing from two to six in the four-year period.

Enrollment in agriculture is 2,121 or 86 percent of the total. Veterinary medicine accounts for 11 percent of the total enrollment and engineering accounts for the balance, or 3 percent. Only 2 percent of the staff (13) hold advanced degrees from U.S. universities.

The library of MPKVV is the smallest of the nine with only 13,500 volumes, but this situation may be corrected in the next five years since the University has been operating only four years.

Four colleges of the University offer bachelor's degrees, nine departments offer master's degrees, and eight departments offer Ph.D. degrees.

The campus at Rahuri comprises nearly 800 acres, the experimental lands are over 1,200 acres, and the university farm covers nearly 3,000 acres.

The number of research stations now under the administration of the University is 21, or 12 less than 43 that transferred to the University when it was established. Two additional agricultural universities have been established in Maharashtra State since MPKVV was established in 1969, and some of the 43 stations have been transferred to these universities. The University has 26 All India research projects underway financed by the ICAR (Indian Council of Agricultural Research) and 21 University research projects. The scope of service by the University extension program is limited to nine districts out of a total of 26 districts in the state. Maharashtra is the only state in India with more than one agricultural university; it has four.

9. Haryana Agricultural University, Hissar, Haryana

- (1) Date of enabling legislation: April 2, 1970 (preceded by ordinance in January 1970)
- (2) Date of official opening of University: February 2, 1970

This is the youngest of the nine institutions as a full-fledged agricultural university. However, the two colleges at Hissar, Agriculture and Veterinary Sciences, were in operation at Hissar before the University was established. The University came into being early in 1970, and previously these two colleges were part of the Punjab Agricultural University with its home campus at Ludhiana.

Shortly after the official opening of the University in February 1970, two more colleges were added, namely, a college of Basic Sciences and Humanities, and a College of Animal Science. In 1972, a Sports College for physical education and athletics was established, making a total of five colleges in all. In 1973, a College of Home Science was established, making a total of six colleges in the University. There are no branch campuses at other locations in the state.

Enrollment at the Hissar campus quadrupled from 1964 to 1973 from 373 students to 1,470. The largest increase has occurred in agriculture, with a rise from 86 students in 1964 to 892 in 1973 or a net increase of 806. During the same period enrollment in veterinary sciences decreased from 263 to 221, animal science increased from 10 to 136. The Sports College had 66 students in its first year (1972) but declined to 54 in 1973. The new Home Science College had 138 students in its first year of operation (1973). Enrollment in basic sciences and humanities is post-graduate only, and increased from 14 students in 1964 to 29 in 1973.

Post-graduate work is offered in agriculture, veterinary sciences, basic sciences and humanities, and animal science. Post-graduate enrollment increased from 51 in 1964 to 359 in 1971, but fell to 314 in 1972 and to 281 in 1973.

During the little more than three years of the life of the institution at Hissar as an agricultural university, buildings, laboratories, and other facilities have expanded rapidly under the leadership of the first Vice Chancellor, A.L. Fletcher, who served in this capacity from February 2, 1970 to February 6, 1974. The campus at Hissar is now considered one of the outstanding university campuses in India.

The faculty has been upgraded since the Hissar campus became a University in 1970. Today nearly two-thirds of the faculty of 556 hold master's degrees, and one-third hold the Ph.D. degree, with only 3 percent of the faculty having the bachelor's degree as their highest degree. The institution owns more than 3,100 acres of land for campus, experimental work, and farming.

The University has authority to provide extension education services statewide and 72 extension specialists are operating at the district level. The university has nine research stations and 86 university research projects underway in addition to 26 All India research projects financed by ICAR.

The institution at Hissar has been quite generously financed. During the decade 1964-1973, the expenditures of HAU have approximated those of GBPUAT at Pantnagar (\$22,135,000 compared with \$23,983,000 at Pantnagar) which services a much larger state (54 districts compared with 10 in Haryana) and a student body one-third larger than that at Hissar.

INFORMATION PROFILES OF THE ELEVEN NON-U.S. ASSISTED INDIAN AGRICULTURAL
UNIVERSITIES, IN THE ORDER OF THEIR OFFICIAL OPENING

1. University of Kalyani, District Nadia, West Bengal

- (1) Date of enabling legislation: June 22, 1960
- (2) Date of official opening: September 1, 1960
- (3) Home campus colleges: Two - Agriculture and Basic Science and Humanities
- (4) Branch Campus Colleges: None
- (5) Enrollment: Undergraduates, 504; Post-graduates, 111; Total, 615
- (6) Professional staff: Teaching, 78; Research, 13; Extension Education, 4; Farm, 3; Total, 98
- (7) Highest degree held by staff: Master's, 43; Ph.D., 55; Advanced degrees from U.S., 9.
- (8) Library: Volumes, 36,000; Periodicals, 470; Total, 36,470
- (9) Degrees offered: Bachelor's and Master's degrees in Agriculture and Ph.D. in Agricultural Disciplines
- (10) Earn-Learn Program: Yes
- (11) Land Area in Hectares: Campus, 505; Experimental Work, 346; University Farm, 210
- (12) Research program: 43 current projects, 9 stations
- (13) Extension program: 4 specialists at college level; none at district level; providing extension education services to two districts of the state of West Bengal.

2. Assam Agricultural University, Jorhat - 4, Assam

- (1) Date of enabling legislation: Assam Agricultural University Act (XXIV) of 1968
- (2) Date of official opening: April 1, 1969
- (3) Home campus colleges: Two - Agriculture and Home Science
- (4) Branch campuses: One - Veterinary Medicine
- (5) Enrollment: Undergraduate, 662; Post-graduate, 51; Total, 713
- (6) Professional Staff: Teaching, 101, Research, 91; Extension Education, 2; Total Staff, 194
- (7) Highest degree held by staff: Bachelor's, 20; Master's, 160, Ph.D.'s, 14; Advanced degrees from U.S., none
- (8) Library: Volumes, 16,752; Periodicals, 2,762; Total, 19,514
- (9) Departments granting degrees: Bachelor's 28; Master's, 16; Ph.D.'s, none, Total, 44
- (10) Earn-Learn Program: Yes
- (11) Land Area in Hectares: Campus, 40.5; Experiment Stations, 47.4; University Farm, 60.8
- (12) Research Program: Projects, 32; Stations, 12
- (13) Extension Program: Specialists at District level, 12; scope of service, statewide.

3. Punjabrao Agricultural University, Krishinagar, Akola, Maharashtra

- (1) Date of enabling legislation: January 8, 1969
- (2) Date of official opening: October 9, 1969

- (3) Home campus colleges: Four - Agriculture, Veterinary Science, Post-graduate; Engineering, and Basic Sciences and Humanities.
- (4) Branch campuses: Two - Agriculture, Veterinary Medicine
- (5) Enrollment: Undergraduate, 448; Post-graduate, 160; Total, 648
- (6) Professional Staff: Teaching, 298; Research, 496; Extension Education, 16; Total, 810
- (7) Highest degree held by professional staff: Bachelor's 409; Master's, 256; Ph.D.'s, 30; Advanced degrees from U.S., 15
- (8) Library: Volumes, 45,435; Periodicals, 650; Total, 46,085
- (9) Departments granting degrees: Bachelor's 16, Master's, 15; Ph.D.'s, 15; Total Departments, 16
- (10) Earn-Learn Program: Yes
- (11) Total Land Area Hectares: Campus, NA; Experimental Work, 1,200; University Farm, 3,400
- (12) Research Program: Projects, 250; Stations, 16
- (13) Extension Program: Specialists at college level, 15; at district level, none; scope of service, 8 districts.

4. Himachal Pradesh University, Simla, H.P.

Established July 22, 1970

Data not available

5. Rajendra Agricultural University, Patna, Bihar

Established July 22, 1970

Data not available

6. Tamil Nadu Agricultural University, Lawley Road, Coimbatore

- (1) Date of enabling legislation: April 26, 1971
- (2) Date of official opening of University: June 1, 1971
- (3) Home campus colleges: Four - Agriculture, Agricultural Engineering, Basic Science and Humanities, Horticulture
- (4) Branch campuses: None
- (5) Enrollment: Undergraduate, 1,210; Post-graduate, 288; Total, 1,498
- (6) Professional Staff: Teaching, 589 (includes research), Extension Education, 38; Total, 627
- (7) Highest degrees held by professional staff: Bachelor's 138; Master's, 286; Ph.D.'s, 44; Others, 159; Total, 627, Advanced degrees from U.S., 10
- (8) Library: Volumes, 84,190; Periodicals, 581; Total, 84,771
- (9) Departments granting degrees: Bachelor's, 3; Master's, 9; Ph.D.'s, 7; Total, 19
- (10) Earn-Learn Program: Yes
- (11) Total Land Area Hectares: Campus & Stations, 593; Experimental Work, 313; University Farm, 304
- (12) Research Program: 640 projects, 16 stations
- (13) Extension Education Program: Specialists at college level, 7; Specialists at district level, 20; scope of service, statewide

7. Kerala Agricultural University, Mammuthy, Trichur District, Kerala

- (1) Date of enabling legislation: September 10, 1971
- (2) Date of official opening: February 1, 1972
- (3) Home campus colleges: Two - Agriculture and Horticulture
- (4) Branch campuses: One - Agriculture
- (5) Enrollment: Undergraduates, 144; Post-graduates, 44; Total, 188
- (6) Professional Staff: Teaching, 199; Research, 139; Extension Education, 2; Total, 260
- (7) Highest Degrees of Staff: Bachelor's, 50; Master's, 162; Ph.D.'s, 48; Advanced degrees from U.S., none
- (8) Library: Volumes, 22,000; Periodicals, 2,500; Total, 24,500
- (9) Departments granting degrees: Not available
- (10) Earn-Learn Program: Yes
- (11) Total Land Area of campus and three colleges is 801 hectares
- (12) Research Program: Projects, 8; Stations, 22
- (13) Extension Program: Specialists at college or district levels as yet, but has statewide service authorization

8. Konkan Agricultural University, Dapoli, District Ratnagiri, Maharashtra

- (1) Date of enabling legislation: May 18, 1972
- (2) Date of official opening: May 18, 1972
- (3) Home campus colleges: One - Agriculture
- (4) Branch campuses: Three - Agriculture, Veterinary Medicine, and Fishery
- (5) Enrollment: Undergraduates, 528; Post-graduate, 42; Total, 570
- (6) Professional Staff: Teaching, 113; Research, 48; Extension, 4; Total, 165
- (7) Highest degree held by staff: Bachelor's, 49; Master's, 89; Ph.D.'s, 13; Total, 151; Advanced degrees from U.S., 10
- (8) Library: Volumes, 18,452; Periodicals, 2,485; Total, 20,937
- (9) Departments granting degrees: Bachelor's, 2; Master's, 3; Ph.D.'s, 2; Total, 7
- (10) Earn-Learn Program: Yes
- (11) Total Land Area Hectares: Campus, 3,300 hectares being acquired
- (12) Research Program: 15 current projects; 13 stations
- (13) Extension Program: Specialists at college level, 10; specialists at district level, 1; scope of limited service, districts serviced, 3

9. Marathwada Agricultural University, Parbani, Maharashtra

- (1) Date of enabling legislation: July 14, 1972
- (2) Date of official opening: July 17, 1972
- (3) Home campus colleges: Two - Agriculture and Veterinary Science
- (4) Branch campuses: None
- (5) Enrollment: Undergraduate, 815; Post-graduate, 106; Total, 921
- (6) Professional Staff: Teaching, 84; Research, 88; Extension Education, 17; Total, 189
- (7) Highest degree held by staff: Bachelor's, 54; Master's, 126; Ph.D.'s, 9; Total, 189; Advanced degrees from U.S., 1
- (8) Library: Volumes, 14,000; Periodicals, 30; Total, 14,308

- (9) Departments granting degrees: Bachelor's, 2; Master's, 1; Ph.D.'s, None, Total, 3
- (10) Earn-Learn Program: No
- (11) Total Land Area Hectares: Campus, 40; Experimental Work, 118; University Farm, 1,211
- (12) Research Program: 8 current projects; 8 Stations, four All India Coordinated Projects (Sorghum, millet, pulses, and cotton).
- (13) Extension Program: Specialists at college level, 10; specialists at district level; none, scope of service, five districts of Marathwada region.

10. Gujarat Agricultural University, Ahmedabad 4, Gujarat

- (1) Date of enabling legislation: September 17, 1969
- (2) Date of official opening: February 1, 1972
- (3) Home campus colleges: Three - Agriculture, Veterinary Science and Dairy Science
- (4) Branch campuses: Five - 3 Agriculture, one Veterinary Medicine, and one Dairy
- (5) Enrollment: Undergraduates: 1,572; Post-graduates, 224; Total, 1,796
- (6) Professional Staff: Teaching, 211; Research, 200; Extension Education, 4; Total, 415
- (7) Highest degrees held by staff: Bachelor's, 249; Master's, 111; Ph.D.'s, 40; Others, 15; Total, 415, Advanced degrees from U.S., 28
- (8) Library: Volumes, 63,044; Periodicals, 7,689; Total, 70,753
- (9) Colleges granting degrees: Bachelor's, 5; Master's, 4; Ph.D.'s, 4
- (10) Earn-Learn Program: Yes
- (11) Total Land Area Hectares: Campus, 1,037; Experimental work, 3,418; University Farm, 463; Residential, 101
- (12) Research Program: 45 current projects; 5 stations; 20 projects coordinated at department level
- (13) Extension program: Specialists at college level, 20, specialists at district level, None; scope of service, statewide but currently covers districts around campus only.

11. Gulam Sadiq University of Agriculture - Jammu-Kashmir State

In February, 1974, an officer was stationed on duty (O.S.D.), Dr. A.S. Athwal, at Jammu - Tami, Jammu-Kashmir State. He is the Vice Chancellor designate and was formerly Dean of Agriculture at Punjab Agricultural University.

The draft act has been prepared and at time of this writing, was awaiting examination and clearance by the State Law Department. It provides for statewide services, in teaching, research, and extension education; experimental stations and training centers at 56 places; limited enrollments; at present 50 undergraduates in agriculture per year. Professional staff currently consists of 14 teachers. Five or six research stations are planned.

With the creation of Sadiq University of Agriculture, every major state in India has an agricultural university and Maharashtra State has four. With the nine AID-assisted Indian agricultural universities, this makes a total of twenty.

V. CONCLUSIONS

In general, the nine universities have concentrated on those applied fields which are of most significance to India's welfare and progress in her present state of development, i.e., improving agricultural production, technology, and rural living areas which for many years were neglected. They are doing this through the fundamental approach of integrating teaching, research, and extension education at the departmental level, thereby achieving a high degree of relevance in helping to solve India's major agricultural and rural problems. Much has been achieved in the past two decades, particularly the last decade, and although much remains to be done, the services of 20 agricultural universities covering every major state in India should make it possible to achieve considerable progress in improving rural India in the coming decades.