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AN INSTITUTIONAL ANALYSIS OF THE
BANGLADESH AGRICULTURAL UNIVERSITY

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I. INTRODUCTION

This institutional analysis describes key institutional features of the Bangladesh Agricultural University (BAU); evaluates its success in carrying out core functions in teaching and research; examines some strategic challenges to institutional strengthening efforts; and recommends design and implementation tactics likely to be effective if USAID decides to proceed with a Higher Agricultural Education Project.

Information was collected during three visits (total of five days) to BAU in July and August, 1987. Interviews were held with about 50 administrators, researchers, teachers, students, and workers associated with the University. In addition, a number of documents--handbooks, budgets, research reports, etc.--were examined. For purposes of this study, an "institutional analysis" examines those characteristics--organizational structures, rules and regulations, administrative procedures, group interests, political processes, resource limitations, shared and opposed values--which can be expected to facilitate or hinder improved operation of the institution in question.

BAU presents a variegated countenance to observers. Some attractive features--faculty members dedicated to teaching and research; students who attend classes, pass exams, and find appropriate professional work; an academic timetable that, between political disturbances, moves steadily forward; resourceful "making do" with limited resources--are apparent to the careful campus observer.* Unfortunately, unattractive features--dramatic underfunding, poor maintenance of equipment and facilities, student and worker unrest, new graduates with limited practical knowledge--are also apparent, even to superficial observers.**

Located physically outside Dhaka and administratively outside key agricultural ministries, BAU suffers from "structurally-determined" opposition and a Bad Press. It is in direct budgetary competition with other universities. Within a competitive budget framework, proponents of Dhaka University and the University of Engineering and Technology can easily deride BAU as "provincial" and "second rate". Since BAU is distant from Dhaka, teaches unglamorous applied sciences, and draws few students from the national elite, these assertions are not easily challenged.+ In addition, public support for universities and students, in general, is limited and probably narrowing. All universities fare poorly in the annual budget cycle.

* i.e. Substantial institution building has already taken place.

** i.e. In many ways BAU is a typical Bangladeshi Institution.

+ These points are expanded in Section III below.

BAU researchers must compete for funding and donor support against scientists of autonomous agricultural research institutes--e.g. the Bangladesh Agricultural Research Institute (BARI), the Bangladesh Rice Research Institute (BRRI), the Fisheries Research Institute (FRI), the Livestock Development Institute (LDI), etc. In this competition, BAU researchers are disadvantaged in at least three ways: 1) they are part-time researchers, 2) administratively outside the agricultural ministries, and 3) part of a temporary "have not" institution which currently lacks expatriate advisors, significant foreign funding, and "visibility" to outsiders.*

BAU currently enjoys substantial administrative autonomy vis-a-vis senior agricultural (not educational) bureaucrats. Furthermore, BAU has passed into and out of the purview of these bureaucrats within a recent three year period. This combination of circumstances has led to considerable resentment among agricultural bureaucrats, and observers should apply reasonable "discount procedures" when listening to their opinions of BAU.

In reviewing this study, most readers will agree that: BAU is a firmly established institution, not likely to "go away"; it plays an essential role in supplying professionals to the agricultural sector; and rural Bangladesh will be better off if BAU plays its role more effectively. If these assertions are accepted, the "bottom line" issues are: 1) Can BAU significantly improve its performance in this essential service role? 2) Should USAID adopt an institutional strengthening project at BAU (as the best use of resources in the agriculture sector)?

* BAU benefited from USAID funding in the 1960s and IDA support in the 1970s. Currently there are no expatriate advisors (useful for methodological advice, editorial assistance, maintaining international contacts, etc.) or significant funding sources (which allow for major capital improvements, training efforts, and such "extras" as publication costs and travel to international conference) which make an institution appear more "competent" to outside observers.

II. BUDGETING, FINANCE, AND ADMINISTRATION

General Observations

Administratively, BAU is an integral part of the Ministry of Education. A few observations will demonstrate this point: 1) The University is almost completely dependent on central revenues for its annual budget. 2) BAU workers are hired, supervised, promoted, disciplined, paid, and retired under central regulations. 3) Student expenses (educational and subsistence) are heavily subsidized from central revenues. 4) All significant decisions must be approved by the University Syndicate (carefully "balanced" by appointment of senior bureaucrats) and Chancellor (President Ershad).

As de facto central bureaucrats in an impoverished "bureaucratic polity",* BAU teachers and administrators are subject to relentless challenges--underfunding, a tortuous budget process, over-restrictive regulations and approval processes, politicized students and workers--in their efforts to provide sound education and carry out respectable research. That they sometimes fail is not surprising; that they frequently succeed is a tribute to their creativity, optimism, and energy.

The Annual Budget Process

BAU "recurring expense" budgets are heavily dependent on annual central grants. "Income from own sources" covered only 8.3% of recurring expenses in 1984-85, 8.5% in 1985-86, and an estimated 7.3% in 1986-87. Remaining funds are provided through the University Grants Commission, in an annual exercise which is time consuming for administrators and confusing and discouraging for faculty and students.

* A "bureaucratic polity" is an administrative/political system substantially dominated by central bureaucrats and their value systems.

The annual budgetary process for recurring expenses follows the following schedule:*

- August - BAU departments draw up their "requirements" for items other than salaries and allowances for the following fiscal year. The Treasurer's Office calculates salary and allowance "requirements" based on departmental staffing projections..
- September - Departments submit proposed budgets for the following year (e.g. in September 1987 for FY 1988-89). The Treasurer's Office begins to meet with Department Heads.
- October - Negotiations between the Treasurer and Department
November - Heads continue. Departments are forced to reduce their proposed budgets, often by half or more. Some proposed items are eliminated, others reduced. The Treasurer's Office attempts to control personnel costs by holding down new hiring. Often there are strong internal and external pressures to hire more third and fourth class workers. The overall budget request is established 25-30% on the high side, to provide a basis for negotiation.
- December - The University Syndicate approves the budget developed by Treasurer's Office and forwards it to the University Grants Commission (UGC). The UGC receives a lump sum which must cover the recurring expenses of six universities.
- January - A representative of the UGC visits BAU and
February - examines budgetary requests and assumptions. He establishes a lower overall figure, and requires BAU to restructure the budget accordingly. Sometimes a minimum figure is set for "salary and allowances", thus severely constraining the budget for all other expenditures.** New initiatives and even ongoing activities of the academic departments are severely constrained.

* The BDG Fiscal Year is July 1-June 30.

** These expenditures, listed as "contingencies", may include such essential items as teaching materials, minor laboratory equipment, chemicals and reagents, faculty travel costs, support for student field trips, equipment spares and repairs, etc.

- March - A "Re-cast" budget is developed by BAU. Lengthy, often heated exchanges among interest groups are required to reduce planned expenditure to levels set by the UGC.
- April
- May-June - The national budget is assembled. BAU's Re-cast budget is generally announced as the official BAU budget for the upcoming fiscal year.
- July - Funds for the current fiscal year are belatedly released.
- September
- January - Second half funds are released. Often there is an announcement that overall spending against the original budget will be reduced. The UGC is generally successful in resisting pressures to reduce official university budgets at this late date.
- March

Table 1 outlines the annual process by which plans of individual teachers and academic departments (quite modest in any case) for improving teaching and research at BAU, are inexorably reduced to "realistic" expenditure levels.

TABLE 1: THE BUDGET REDUCTION PROCESS, 1986-87*

1) <u>Total Requirements</u> (assessed by individual teachers-August)	Tk. 40.0 Crore
2) <u>Total Requirements</u> (as submitted by departments-September)	Tk. 27.0 Crore
3) <u>Total Requirements</u> (as submitted by BAU-December)	Tk. 18.5 Crore
4) <u>Total Requirements</u> (Re-cast BAU Budget-April)	Tk. 16.1 Crore
5) <u>Total Requirements</u> (final negotiated BAU Budget-June)	Tk. 13.0 Crore

In the reduction process, budgeted "salary and allowance" expenditures stay roughly the same, so that funds available for teaching, research, administration, student services, etc. are reduced from more than 75% of anticipated expenses (in line 1) to less than 30% (in line 5). There is little room for innovation, and the ability of the institution to maintain its physical plant and administrative systems is sorely taxed.

* Newspaper reports in September, 1987 suggest that there will be additional reductions, as 1987-88 budgets are reduced by 8-10% at the end of the first fiscal quarter.

Table 2 compares BAU budgets over several years. (Readers should be aware that the "reduction" process outlined in Table 1 is an annual process.) It suggests that year-to-year budget increases are approximately 20%. However, real increases are considerably smaller, since inflation rates consistently run 10-12%, and gradual decreases in the Taka exchange rate against major currencies effectively reduces buying power for imported items (books, journals, laboratory equipment, vehicle tires, etc.) Furthermore, Table 3 suggests that the trend of expenditure for items other than salaries and benefits is downward.

Close examination of Table 3 shows substantial shifts in the "salary and benefits" portion of the BAU budget, and that this item dominates the recurring expense budget. Teacher salaries are the single largest item in the current budget, and the Table shows a rapid increase in teacher salaries over a two year period from 1984-85 to 1986-87. This generally reflects pay concessions to first class civil servants made in 1985, since faculty size has not changed significantly for 10-15 years. Employees in other grades also received substantial increases.

Teachers' annual base pay averaged Tk.66,000 in 1986-87, while "officers" (mid-and senior-level administrators) received an average of Tk.32,000. Base pay for third and fourth class employees averaged Tk.13,000. Benefit packages moderate sharp differentials among employee categories to some degree. Nevertheless, BAU teachers are well compensated by the standards of the Bangladeshi public sector.*

BAU is "paternalistic" in budgeting and administrative practices, at least in comparison with U.S. universities. Housing is provided for teachers and officers** and third and

* In an implied contest between personal concerns for higher salaries and comfortable living conditions, and professional concerns for improved teaching and research, the former interests have been dominant.

** Generally this is a flat on the university campus. Floor space and amenities vary with professional or administrative grade. Teachers and officers pay a modest 7 1/2% of base salary for the service.

TABLE 2: ANNUAL BUDGET ALLOCATIONS, 1984-1988

	Actual Income <u>1984-85</u>	Actual Income <u>1985-86</u>	Original Request of BAU <u>1986-87</u>	Revised Allocation after UGC Inspection <u>1986-87</u>	BAU Recast Budget <u>1986-877</u>	Estimated Actual Income <u>1986-87</u> *	Original Request of BAU <u>1987-88</u>	Estimated Actual Income <u>1987-88**</u>
1. Req. UGC Grant	7,75,00,000	9,70,00,000	17,58,80,000	10,00,00,000	10,00,00,000	10,00,00,000	19,41,50,000	14,40,00,000
2. Special UGC Grant	22,00,000	22,07,000	-	-	-	2,00,00,000	-	-
3. Own source Income	70,76,329	92,96,453	90,00,000	1,00,00,000	94,96.600	94,96,600	1,00,00,000	1,00,00,000
Total Income	7,65,75,921	10,00,45,901	18,48,91,847	11,00,00,000	16,06,48,768	13,00,00,000	19,41,50,000	15,40,00,000
Total Expenses	8,50,33,473	10,94,13,733	18,48,86,762	11,00,00,000	16,06,47,088	13,00,00,000	20,41,50,000	15,40,00,000

* Estimated by BAU Treasurer, based on discussions with University Grants Commission.

** Estimated by author, based on assumption that UGC grant will increase 20% over 1986-87

TABLE 3: DETAILS OF ACTUAL AND PLANNED BUDGETS, 1984-85 TO 1987-88

	<u>Actual 1984-85</u>	<u>Actual 1985-86</u>	<u>Re-cast 1986-87</u>	<u>Original* 1987-88</u>	<u>Estimated (by Author)** 1987-88</u>
Total Expenditure	8,50,33,473	10,94,13,733	13,00,00,000	24,21,82,161	15,60,00,000
Total Salary & Benefits	5,02,26,305	7,17,00,338	9,19,25,588	11,31,04,161	10,17,93,600
Salary & Benefits as a % of Total Expendi- ture	(59.1%)	(65.5%)	(70.7%)	(46.7%)	(65.3%)
<hr/>					
Teacher Salaries+ (as % of Total)	78,58,724 (9.2%)	1,44,75,428 (13.2%)	2,51,59,244 (19.4%)	3,01,19,990 (12.4%)	2,71,08,000 (17.4%)
Officer Salary (as % of Total)	27,76,407 (3.3%)	42,74,889 (3.9%)	59,30,625 (4.6%)	69,51,065 (2.9%)	62,55,900 (4.0%)
Third Class Emp.Salaries (as % of Total)	62,21,602 (9.7%)	1,23,30,996 (11.3%)	1,38,09,444 (10.6%)	1,50,80,812 (6.2%)	1,35,72,900 (8.7%)
Fourth Class Emp.Salaries (as % of Total)	43,98,387 (5.2%)	1,12,50,452 (10.3%)	1,40,34,514 (10.8%)	1,52,69,142 (6.3%)	1,37,42,100 (8.8%)
"Other" Expenditures (as % of total)	3,48,07,168 (40.9%)	3,77,13,395 (34.5)	3,80,74,412 (29.3%)	12,90,78,000 (53.3%)	5,42,06,400 (34.7%)

* Total expenditure subject to downward revision, so that salary and benefits will be a much larger percentage of the whole.

** Assumptions: Total budget increases by 20% over 1986-87. Salaries decrease by 10% from original 1987-88 request.

+ Only base salary expenditures are examined here, since "benefits" are not disaggregated by employee group.

fourth class officers receive housing allowances. Students pay minimal tuition (Tk.12 per month for undergraduates and Tk.15 for graduates). These figures have increased only 20% in nominal terms since 1961 and thus have decreased by 90-95% in real terms. Students also pay ludicrously low fees for dormitory rental (Tk.3 month) and for rental of imported textbooks (Tk.1/book/year). In 1985-87, student payments accounted for only 0.4% of BAU income.* For purposes of comparison, at State universities in the U.S., student tuition payments generally cover 25-40% of total operating cost, and dormitory fees generally cover full costs of dormitory operation.

To summarize, the BAU recurring budget is "burdened" in several ways that are unfamiliar to expatriate observers: 1) The salary/benefit bill is rising at an annual percentage rate that exceeds the prevailing inflation rate and annual increases in the overall budget, thus greatly limiting the ability of faculty and staff to pursue institutional improvements. 2) The budget includes several items--e.g. maintenance of faculty housing, dormitory operations--that lie outside the direct financial responsibility of universities in most other countries. 3) Students render no effective financial support for the institution, nor does BAU have significant other "own account income". The result is that budget-making, ordinarily an exercise with strong strategic overtones, is severely constrained. BAU staff have virtually no "marginal anatomy" in budget-making, and this no opportunity to set their own developmental agenda and pursue it with their own resources.

A brief review of the 1987-88 budget-making experience of the Department of Agricultural Education is instructive: In August-September 1986, the Department Head and senior faculty established an initial expenditure budget of several lakhs taka. It included funding for student field trips (approximately Tk.220,000). It also included modest funding for a photographic darkroom, for vehicle repairs, gasoline and oil, faculty travel, journal publication costs, etc. During negotiations with the Treasurer's Office, the budget line for student field trips was transferred to a contingency account controlled by the Treasurer. Other budget heads were drastically reduced.

* It is probable that the cost of collecting and accounting for these fees exceeds the amount collected. Reasonable standards of management seem to dictate that student payments be raised substantially (say, by a factor of 30-50), or phased out altogether.

At the beginning of the new fiscal year, the Department Head learned that the budget line for student field trips had been transferred* back to the Department's budget. As a result of this maneuver and previous cuts, a total of Tk.70,000 remained for support of all other Department activities. During our visit to campus, the Department Head was planning to spend the bulk of available funds on two items: 1) a Bengali typewriter (a purchase not previously planned, but now necessary in light of new regulations regarding language used in official documents), and 2) unexpected repairs on the Department's two dilapidated vehicles. Strategic thinking which went into the original Departmental budget had been effectively undermined!

The Capital Budget

The capital or "development" budget cycle is longer than that for recurrent expenditures, conforming to Bangladesh's Five Year Plans. Otherwise it shares most features of the recurring expense budget system. Moderate initial requirements are eventually reduced by 80% or more, to "realistic" levels. Administrators, teachers, and students are confused and bemused in the process. Long term plans are forgotten as factions compete for control of fragmentary funds that finally emerge from the budget process.

Table 4 outlines the slow, steady process of reduction that the BAU 1985-90 Development Budget passed through between late 1983 and the present.

* The Department Head claims this was done arbitrarily, and without his knowledge.

TABLE 4: DEVELOPMENT BUDGET, 1985-90

<u>Date</u>	<u>Budget Stage</u>	<u>Amount</u>
Approx. Sept., 1983	Faculties, Departments, and Other Units List their "Requirements"	Tk.117.0 crore
December, 1983	BAU Presents It's First Official Budget Proposal.	Tk. 42.8 crore
Approx. March, 1985	BAU Presents It's Re-Cast Budget	Tk. 29.0 crore (Tk.24.0 crore, "essential")
1986	BAU Told by Ministry of Agriculture Officials to Reduce Total to 10 Crore.	Tk. 10.0 crore
June, 1987	The Planning Commission, UGC, and Ministry of Education Agree to a Total of 15 Crore.	Tk. 15.0 crore
August, 1987	Actual Allocations to Date	Tk. 2.23 crore

At present allocation rates, BAU will receive an estimated Tk.3.72 crore, during the Third Five Year Plan, equal to 8.7% of funds requested in late 1983, or 12.8% of funds officially approved in the Spring of 1985.

Weaknesses in University Administration

The University is not staffed for efficient operation. The faculty is adequate in size and adequately trained. With modest additional resources they can do a great deal to improve BAU teaching and research. Administrators ("officers" in local terminology) are probably sufficient in overall numbers, and most hold Master's or Law degrees. However, many seem (to an expatriate observer) to be professionally under-equipped for their administrative/managerial duties. Routine tasks are handled slowly, but adequately. But there seems to be little concern with improving systems.

Like many Bangladeshi institutions, BAU is ill-served by it's third and fourth class employees. It is fair to say that many, perhaps most, clerks and laborers are underemployed and inefficient.* It's not entirely their fault, since Bangladeshi personnel systems are generally ineffective in hiring and using

* But this also reflects poorly on the management skills of senior administrators and academic officials.

the skills of para-professionals,* and in instilling discipline and initiative in clerks and laborers. As a result, numerous examples of ineffectiveness and inefficiency come to light during a single day of campus observations. Personal Assistants to senior officials are incapable of scheduling appointments or taking messages for their bosses. Library clerks sit and chat while books wait to be re-shelved and patrons look in vain for a real librarian to provide information. Halls and stairways are dusty and litter-strewn, while fourth class workers sit idly by.

It's reasonable to assume that BAU has several hundred excess third and fourth class workers. Officials are reluctant to cite specific instances, but several informants spoke in general terms about internal and external pressures to hire more of these workers. Yet the need for additional workers in this category cannot be demonstrated. During the period 1980-81 to 1984-85 the student population declined (by 7.0%) from 2850 to 2650 and faculty size was level at about 380. During the same period the number of third and fourth class employees increased (by 37.5%) from 1600 to 2200.** Most observers would agree that there is no apparent improvement in the quality of campus services.

Decision processes are cumbersome and slow, and even the smallest decisions are elevated to the highest levels. Proposed curriculum changes must be passed through five approval levels, and final approval may take one-three years. Even senior officials of the University have minimal budgetary authority. Department heads can request advance funds only up to Tk.750. Individual expenditures exceeding Tk.75 must be pre-approved by the Vice-Chancellor. All official travel and employee leave (even one day of travel or leave) must be pre-approved by the Vice-Chancellor.

* In effect, the "mix" is wrong. There are far too many peons, guards, messengers, and tea servers, and far too few research assistants, laboratory technicians, and professional secretaries.

** On U.S. campuses the teacher:"other employee" ratio is roughly 1:2 or 1:3. At BAU it's 1:6.2. On U.S. campuses the overall student:worker ratio is roughly 4:1 to 6:1. At BAU its 1:1.

BAU is run very much "by the Book". Among other things, The Calendar (last officially revised in 1972) specifies membership on all major committees, establishes Taka amounts for student fees, prescribes standards for management of the employee provident fund, describes the color of official caps and gowns for all Faculties, lays down rules for Syndicate and Academic Council meetings, and describes the functions of Student Mess Committees.* Among other things, the Budget and Accounts Manual prescribes duties of BAU administrators; establishes procedures for receiving and making payments; establishes personnel management, contracting, and tendering procedures; describes the entire accounting, budgeting, and cash management system; and prescribes the format of 69 standard forms.

Descriptions offered above should not be interpreted as criticism of systems per se, but as an indication of what BAU administrative systems do and don't do. They do ensure centralized control and reasonable financial probity. They don't provide routine, timely information on "how well the system is working" or provide significant insights into the quality of the organization's basic products, teaching and research. They don't encourage (in many ways, through cumbersome decision processes, they actively discourage) regular re-assessment and re-design of major programs.

BAU management systems are simultaneously "tight" and "loose". They're very tight in ways described above, but "loose" in other ways. For example, six faculties admit M.Sc. students without a clear admissions policy or apparent numerical quotas or limitations. The BAURES office responsible for all faculty research, is unable to provide a consolidated list of current grantees. There seems to be no system for evaluating teachers in the classroom or laboratory. Academic departments are not routinely provided with a statement of their expenditures, and must send representatives to the Treasurer's Office to learn where they stand. The most recent Annual Report is four years out of date. Expenditure data are available only weeks or months after the end of the period under review.

Administrative Setting and Political "Crosscurrents"

BAU's administrative effectiveness is substantially affected by its broader setting, particularly by other institutions which may adopt positive, neutral, or negative stances toward BAU and its initiatives. What follows is a rough assessment of BAU's "standing" with other institutions.

* U.S. universities have similar rules and regulations, but somehow they don't retard effective action to the same degree.

It can generally be assumed that BAU has a bureaucratically neutral or slightly negative relationship to the UGC and Ministry of Education (MOE). As one of six universities of more-or-less equal status, all operating under chronic resource constraints, BAU is in constant competition with its sister institutions. Only occasionally--e.g. when university employees' unions or student associations are active nation-wide or overall funding for education is under attack--do their interests converge.

BAU can count on few "inside" contacts at UGC or the MOE, since few graduates will end up as officials in generalist bureaucracies such as the MOE. Nor will it find champions among senior bureaucratic or elected officials, since few of these are BAU graduates or have children enrolled there. BAU lacks both the (perhaps over-rated) intellectual aura of Dhaka University and the technical prestige of the University of Engineering and Technology. Nor does it enjoy the regional support likely to adhere to Universities at Chittagong and Rajshahi. Perhaps an implicit fifth place can be conceded to BAU in the budgetary/administrative competition, superior only to Jahangirnagar University, which is far newer and has a less clearcut, practical role in national development.

BAU has educated many mid-level and senior officials of the Ministry of Agriculture and Forests (MAF), the Ministry of Fisheries and Livestock (MFL), and their associated semi-autonomous institutes (BARC, BRRI, BARI, FRI, etc.). There are extensive personal and professional alliances between BAU teacher/researchers and administrators, and their counterparts in the other organizations. However, at the institutional level there is considerable, persistent potential for conflict. Senior ministry officials resent BAU's relative autonomy. Heads of research institutes prefer clearcut allocation of research responsibilities,* and BAU researchers "muddy the waters" by adopting research programs which compete or overlap with those of BRRI, BARI, or FRI scientists**.

BAU's strongest professional alliances should probably be with the Department of Agricultural Extension. BAU has supplied much of the professional staff of DAE, and will continue to do so. BAU faculty can also play a major role in upgrading and updating technical competence of the extension

* Unlike the U.S. there is little sentiment in favor of "scientific pluralism".

** Of these institutional relationships, BAU ties to FRI and the Bangladesh Institute of Nuclear Agriculture (BINA) are most consistently cordial, presumably because these institutions are located on the edge of the BAU campus.

system. However, there are few indications that significant institutional efforts have been made in this direction.*

BAU has weakly positive ties to a number of other institutions, mainly because its graduates now work for them, or because one BAU unit or another provides short-term training to field workers of the institutions. Until recently, the Bangladesh Agricultural Development Corporation routinely employed quite a number of fresh BAU graduates each year.** A fair number of graduates also find employment with the Water Development Board, the Rural Development Board, and such NGOs as BRAC, Proshika, and the Mennonite Central Committee. A few Agricultural Economics students are finding positions in banking, mainly in rural branches of the Agricultural Bank and the four Nationalized Commercial Banks.

BAU's "Reluctant Acolytes"

Under provisions of the Agricultural University Ordinance of 1961, BAU is the premier agricultural degree-granting institution in Bangladesh. Other agricultural education institutions are in the subordinate status of "affiliated colleges". One of them, the Patuakhali Krishi College (PKC), is small and weak. PKC's administrators and faculty are probably grateful to be associated with an institution that is richer and more powerful. Students, at least those who fare well in exams, benefit from receipt of a "BAU" degree.+

The relationship between BAU and the Institute of Postgraduate Studies in Agriculture (IPSA) has several paradoxical elements. In several ways, IPSA is subordinate: it is a young institution, staffed substantially with BAU junior faculty, with few Ph.D. teachers, and dependent on BAU to administer exams and confer degrees. In several other ways, IPSA occupies a superordinate position. Its "mission" is quite "elevated"--to carry out research and selectively admit graduate students. It has foreign funding (from Japan and

* Two exceptions come to mind: 1) Professor Abdul Halim of the Graduate Training Institute has offered to spend a sabbatical year working as a Block Supervisor (the lowest level extension agent) in order to broaden his understanding of the extension process. 2) Vice-Chancellor A.K.M. Aminul Haque offered in 1979 for BAU to take over responsibility for all extension activities in greater Mymensingh District.

** Recently, faced by major "policy reforms" hiring has been slowed.

+ The author has learned very little about the Bangladesh Agricultural Institute, and will offer no comments here.

USAID), expatriate advisors, ample training and equipment resources, high visibility, close ties to research institutes at Joydebpur, and a secure position within the MAF. BAU can expect IPSA administrators to make active, open efforts to move "out from under" BAU's academic authority within the next three-five years. BAU can also anticipate overt and covert opposition from IPSA in a variety of other bureaucratic contexts.

Employee Groups

BAU employees are represented by three separate associations, those of the Teachers, Officers*, and Employees**. Each of these groups is affiliated with a national federation, which articulates common concerns and demands to all six Bangladeshi universities. The Teachers' Association has been relatively quiet for the past two or three years, perhaps as a result of their success in winning major salary and benefit gains in 1985.

The Officers' Association represents 175 non-teaching professionals. Its President, Najibur Rahman, is Deputy Director of the Student Affairs Division. He is also Vice President of the national association, the "Inter-University Officers' Federation". The major national concern is for "equalization of status". The Officers feel that they have lost prestige and status relative to university Teachers. They also receive substantially lower salaries. They would like to alter certain provisions of the 1973 Universities Act, which they feel significantly downgraded their professional status. The Federation's rather nebulous demands for equalization are currently being considered by a national committee chaired by the Vice-Chancellor of BUET.

The major local issue is the "administrative environment". One issue is clear--some officers have been assaulted by students and don't like it. Beyond this, concerns are again nebulous, Administrators resent "untoward influence" from faculty, students, and lower level employees. The students and lower level employees sometimes make "illogical demands" and "misbehave". Faculty members sometimes "dictate improperly" to the University, though usually the Officers' Association and Teachers' Association cooperate.

The vagueness of officer demands reflects their indeterminate position within the University. In a political showdown with teachers, they will always lose. However, in day-to-day operations of the University, they have substantial

* Members of the senior administrative staff.

** Representing third and fourth class employees.

control.* The Officers play a potentially significant role in articulating administrative concerns of units where they work.** e.g. The Librarian is concerned about staffing, hours of service, and staff training. (Faculty members worry mainly about books and journals.) Clinic physicians will articulate demands for improvement of services, etc.

The Workers' Association represents 2200 third and fourth class workers. A wide cross-section of employees are included. e.g. Some have Master's degrees and some are illiterate. Base salaries vary from Tk.800-3000 per month. The leaders claim the Association to be a "purely nonpolitical organization". This is true only in the sense that it is not affiliated with a political party. Unlike the Officers, the Employees have clearly articulated demands. The current demands would be reasonable in a wealthy welfare state--e.g. Sweden--but would, if acceded to, "bankrupt" BAU. Current demands include:

- 1) Housing - Employees want salary advances averaging Tk.50,000 for house construction. Advances are to be interest free and repaid against future salary or employee holdings in the Provident Fund. They calculate that an initial fund of Tk.8 crore is required.+
- 2) Hospital - They want a full-fledged hospital on the BAU campus to provide free medical care to employees and their families.
- 3) Insurance - They want term insurance benefits paid off at the time of retirement, rather than at death.
- 4) "Distressed" Employees - They want grants to poorer employees in case of health problems, to finance weddings, etc.
- 5) Schooling - They would like children of third and fourth class employees to have readier access to the BAU campus school. (Most seats are now occupied by teachers' and officers' children.)

* The Treasurer controls the budget process, the Registrar controls student admissions, etc.

** Such concerns will be articulated poorly by students and not at all by faculty.

+ Establishment of this fund would require a 50-60% in the current BAU budget.

The current Employees' Association is only one year old. Previous associations have apparently broken up over issues of tactics (Shall we strike? When?) and strategy (What are the basic issues? Should we affiliate with a political group?)

The Employees' Association is potentially the most negative force on the BAU campus. Workers have little commitment to educational and research goals. They are almost as numerous as students, and, at this point, more unified. They have identified a set of core demands, and may be able to coalesce behind them for a few years. If significant additional central funds are made available to BAU, they will make strong claims on them.

Student Politics

Student politics are a significant factor in operation of BAU, but not a dominant factor. Their official Students' Association is dormant. Eight political party "student wings" are active on campus, with offices and signboards. They vary from the Marxist left to the Islamic right to the government party. While party groupings have mobilized large numbers of students in the past, it is not clear that there is wide (in terms of total numbers) or deep (in terms of loyalty) commitment at present.

With the academic calendar about two years behind schedule, most students seem committed primarily to attending classes, passing examinations, graduating, and getting jobs.

It is unlikely that general student political activities will interfere significantly with institutional strengthening efforts. However, specific efforts to reform teaching or graduate student research may arouse strong student opposition, especially if those efforts are mounted too quickly, or are inadequately communicated.*

* This problem should, perhaps, be laid at the doorstep of the administration, rather than blamed on "student unrest" in general. They are over eager to close universities, and ineffective in finding and punishing the few perpetrators of violence.

Challenges to Improved Administration at BAU

A number of groups and institutions have been briefly described above. Their goals and interests, relationships to BAU, and their opportunities to assume power or authority have also been considered. Table 5 is a preliminary effort to consolidate previous discussion into a single matrix, in order to achieve a clearer understanding of challenges faced in "institutional strengthening" of BAU.

TABLE 5: A FRAMEWORK FOR ANTICIPATING CHALLENGES
TO "INSTITUTIONAL STRENGTHENING" AT BAU*

Interest Group	Things They Want	Things They Fear	Things They Will Oppose	Things They Will Support	Sources of Cleavage
Students	<ul style="list-style-type: none"> o Production o Jobs, Professional Skills o More Interesting Courses o Internships, Fieldwork 	<ul style="list-style-type: none"> o Sudden Change in the teaching System 	<ul style="list-style-type: none"> o Tuition Increases o Poorly Explained Curriculum Change o Elimination of M.Sc. allowance 	<ul style="list-style-type: none"> o Student Jobs o Changes in teaching that improve their marketability 	<ul style="list-style-type: none"> o Good Students want to graduate, poor Students want to play politics
Teachers	<ul style="list-style-type: none"> o More Support for Research o More Freedom in Teaching o Peace on Campus 	<ul style="list-style-type: none"> o Student action 	<ul style="list-style-type: none"> o Reforms which increase individual accountability for teaching quality 		
Officers	<ul style="list-style-type: none"> o "Respect" for Academic Colleagues o Peace on Campus 	<ul style="list-style-type: none"> o Student Action 	<ul style="list-style-type: none"> o Administrative reforms that limit their discretion & Power. o Elimination of clerical positions, thus lessening patronage positions 	<ul style="list-style-type: none"> o Training for Officers o Some computerization 	
Employees	<ul style="list-style-type: none"> o Higher Wages o Better Working Conditions o More Services 	<ul style="list-style-type: none"> o Loss of Jobs 	<ul style="list-style-type: none"> o Administrative reforms which eliminate jobs of third and fourth class employees 	<ul style="list-style-type: none"> o Training/upgrading of skills for employees (esp. if associated with promotions) 	
MAF Organizations	<ul style="list-style-type: none"> o Well-trained, highly motivated BAU graduates o Ample financial resources to carry out their work. 	<ul style="list-style-type: none"> o Competition arising from "scientific pluralism" 	<ul style="list-style-type: none"> o Large Research funds specifically reserved for BAU. 		
UGC/MOE	<ul style="list-style-type: none"> o More funding for the Universities o More control of the Universities 				<ul style="list-style-type: none"> o Competition between "specialists" (BAU) and generalist (UGC).
Other Universities		<ul style="list-style-type: none"> o They will be held accountable for the "marketability" of their graduates 			<ul style="list-style-type: none"> o Competition with BAU for budget

is should regard this Table as a template or pattern, completed piece of work.

III. TEACHING AND IN-SERVICE TRAINING

General Observations

The BAU faculty appears to be well trained. More than one-third of all teachers have doctoral degrees from foreign institutions.* In addition, dozens of other faculty members have advanced training from foreign universities. For example, 17 Agronomy teachers hold seven Ph.Ds.--from Texas A & M (2), Leningrad, Prague, Kyushu, Nagoya, and BAU. One faculty member received an M.Ag. from Sydney, and nine others hold M.Sc. Ag. degrees from BAU. The Farm Power and Machinery Department presents a different pattern. Of 17 faculty members, only two hold Ph.Ds. (from Cornell and Oklahoma State), but remaining faculty members hold Masters degrees from the Asian Institute of Technology (10), the U.K. (2), BUET, the USSR, and BAU.

Teachers:student ratios at BAU are extremely favorable. In 1983-84 the figures were:

Veterinary Science - 1:5.1
Agriculture - 1:8.5
Animal Husbandry - 1:6.0
Agricultural Economics - 1:5.6
Agricultural Engineering - 1:6.0
Fisheries - 1:9.1
Overall - 1:6.9

By the standards of any U.S. public university and most private colleges, these figures are extremely favorable. Ratios twice or three times as high--1:15 or 1:20--are common in the U.S.

The technical knowledge of BAU is generally sound, though likely to be out of date. Unfortunately, teaching methods and paraphernalia are consistently unimaginative and conventional. Students listen to lectures and work on laboratory problems almost exclusively. They work in classrooms which lack such basic equipment as overhead projectors, and students seldom get

* In 1985, 145 out of 379 faculty members, about 38%, had Ph.Ds. In fields where Ph.D. training is not considered essential--Veterinary Science, Agricultural Engineering--the proportion is low, roughly 20-25%. In such mainline agricultural fields as Agronomy, Soil Science, Plant Pathology, Entomology, Horticulture, and Genetics and Plant Breeding the proportion approaches 50%.

a change of pace by seeing slides, films, or videotapes.* There are no open discussions, question and answer sessions, or teaching cases. "Practical" work is confined largely to the laboratory; students seldom visit farmer's fields to advance their technical understanding of soil science, entomology, or plant pathology. The Department of Agricultural Extension makes laudable efforts to acquaint graduates with farmers and their everyday farming problems. But a major effort is needed to "connect" classroom teaching in agricultural sciences with the day-to-day problems of Bangladeshi farmers.

There is widespread agreement that BAU students have insufficient understanding of Bangladeshi agriculture, and lack practical job skills. A recent survey by Salam, Hossain, and Ali** polled BAU faculty, fresh graduates, supervisors of recent graduates, and graduates who have worked for a few years as professional agriculturists. BAU faculty (N=17) acknowledged that a major area of deficiency in their students is in "acquaintance with field problems" (59%). A great majority (76%) agreed that it is "urgently necessary" to improve the research-extension-education linkage.

Fresh graduates of BAU (N=11) agree that a major weakness in their education is "lectures lacking in field problems" (64%). Supervisors of recent graduates (N=5) agree that BAU training is deficient in "practical knowledge" (100%), and in "knowledge of field problems" (100%). Recent BAU graduates now working as agricultural professionals (N=17) feel that their major professional weaknesses include: "lack of field experience" (17%) and "insufficient knowledge about farmers' problems" (6%.) They propose introduction of the following elements into the undergraduate curriculum: "practical knowledge of field crops" (22%), "short project on field problems" (69%), "acquaintance with farmers' problems" (28%), "pre-service training at the end of the course" (22%), "study tour" (6%.) Among factors responsible for the inadequacy of their education, they include: "teachers with insufficient field experience" (28%), "lectures lacking in recent information" (11%), and teaching that is too "theoretical (lecture based)" (17%).

While it is difficult to draw exact inferences from the commentary presented above, the general inference is clear--BAU education offers insufficient practical, field oriented training. Further evidence of this can be found in course syllabi and examination schedules. While all undergraduates are required to take a "theoretical" course in Agricultural Extension, students in the Faculties of Agricultural Economics and Agricultural Engineering

* Some BAU faculty members would acknowledge this observation with considerable frustration. The Department of Agricultural Extension has tried to organize video production and darkroom facilities for several years, but has failed for lack of funds.

** Salam, M.U., Hossain, S.M.A., and Ali, M.M., "An Evaluation of Agricultural Education in Bangladesh".

do not take the corresponding "practical" course in extension. Faculty of Agriculture students take "practical" extension courses in the second and fourth years, while students in Veterinary Science, Animal Husbandry, and Fisheries receive "practical" extension training only in their final year. All students participate in a six day "study tour" in the fourth year, which emphasizes sightseeing and visits to research stations. "Hours of farmer-oriented field experience" can be estimated as follows:

TABLE 6: UNDERGRADUATE FIELD EXPERIENCE*

<u>Faculty</u>	<u>% of Total BAU undergraduates</u>	<u>Hours of Field Experience-4 years</u>
Faculty of Agriculture	47%	104
Faculties of Veterinary Science, Animal Husbandry, & Fisheries	31%	72
Faculties of Agricultural Economics & Agricultural Engineering	22%	40

While it is difficult to disentangle "theoretical" and "practical" elements of any subject matter, BAU faculties indicate the relative importance they give to "theoretical" and "practical" aspects of each discipline by the number of points they assign to these components. "Theoretical" questions are given greater importance in all cases, but proportions vary greatly by faculty. The Agricultural Economics Faculty assigns only 13% of total examination points to "practical" topics, while the figure is 44% for Veterinary Science. Other faculties assign 29% to 35% of total points to "practical" questions.

Re-design of course syllabi to include greater emphasis on laboratory/workshop sessions, teaching cases in the classroom, and more "field" experiences wherever feasible would do much to strengthen practical skills of BAU graduates. The importance of this educational component can be further emphasized by increasing examination points given to practical topics, and explicitly testing material learned in

* Students achieve these rather small number of "fieldwork" hours by participating in the study tour and during field trips sponsored by their Agricultural Extension professors "between once a week and once a month" during the academic year. These are typically three hour trips during a morning or afternoon, during which students can be expected to spend at least an hour or the bus traveling to and from the field site.

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laboratories, field experiments, case studies, observation, or farmer interviews. These changes will more clearly emphasize the importance of practical application of theoretical knowledge in undergraduate teaching.

There is strong evidence that BAU faculties are training graduates exclusively for service in the public sector. Enrollment projections are made entirely against the needs of public agencies.* When faced with questions (by the author) about job opportunities outside the public sector, Deans and Department Heads have few insights and little information. The University provides neither career counseling nor job placement services. In a setting where application procedures for government jobs are general knowledge, these services are apparently considered redundant. Students interns are sent to public sector research organizations, not to commercial plantations or food processors.

Overall these strategies may realistically represent current demand. However, with significant numbers of recent graduates unemployed, teachers should broaden student conceptual horizons by introducing more field examples and problems which adopt the viewpoint of NGOs and for-profit firms.

BAU students receive a linguistically bifurcated education. Their textbooks are predominantly published abroad, in English. They are expected to write laboratory reports, class papers, and year end exams in English. However, supplemental reading materials are frequently in Bengali, and classroom lectures are English and Bengali in roughly a 50/50 mix.** In a period when there is wide acknowledgement that undergraduate English skills are declining, and Government is placing increased emphasis on Bengali communication, BAU should re-examine linguistic policies. If a "stronger Bengali" option is selected, a program of financial incentives for production of Bengali agricultural textbooks (both original texts and translations) should be undertaken, and the exam system should be converted to Bengali. If a "stronger English" option is adopted, the University should upgrade its English course offerings, especially in composition skills and Remedial English.

* e.g. The Faculty of Fisheries justifies intake of new students at present levels on the number of Upazila Fisheries Extension Officer positions currently unfilled by B.Sc. graduates. The Faculty of Agricultural Engineering formerly assumed that most graduates in Irrigation and Water Management would be employed by BADC or BRDB.

** In East Pakistan times, University lectures were almost exclusively in English.

The Teaching System

Observers familiar with North American or European Universities will find the BAU educational system rigid and conservative. Students choose a faculty at the outset, and proceed lockstep through an unvarying four year curriculum. Undergraduates in the Faculty of Agriculture (47% of current undergraduates) choose between Mathematics and Botany in the first year and Mathematics and Zoology in the second; otherwise, they proceed en masse through 32 standard, year long courses, without electives or opportunities for topical seminars or one-on-one tutorials with their professors.* At the end of each year, there are Faculty-by-Faculty standard examinations, with standard points assigned to each topic. Examination formats are not changed for years at a time. Students have little opportunity to develop individual skills or follow their own interests. Those with a knack for memorization and test taking slide through easily, those who are bright, but learn best through personal experience and close interaction with teachers, fail or achieve mediocre results.

Just as the overall curriculum is rigid and slow to change, so are individual courses offered in the faculties. Table 7 indicates the last date at which official syllabus changes were made for courses offered to Faculty of Agriculture students. This may, or may not, indicate lack of concern by individual teachers and departments. Changes in curricula (e.g. by adding, deleting, or rearranging courses or changing the number of points allocated to year end exams) or syllabi (by adding, deleting, or altering subject matter in an existing course) require concurrence of the Academic Council, which includes all Deans, Department Heads, and Full and Associate Professors.* This unwieldy body, including about a quarter of the entire teaching faculty, is likely to be over-motivated by personal jealousies and administrative rivalries, and under-motivated by concern for educational quality.

* Students in Veterinary Science, Animal Husbandry, Fisheries and Agricultural Economics don't have any course options during the four year curriculum. Students in Agricultural Engineering (13% of current undergraduates) may choose among four Major Subjects--Agricultural Production Engineering, Farm Power of Machinery, Food Technology, and Irrigation & Water Management--in the last two years of study.

TABLE 7: LAST CHANGE IN SYLLABI OF COURSES OFFERED TO FACULTY OF AGRICULTURE STUDENTS**

<u>Subjects</u>	<u>Year</u>
1. Entomology	1983-84
2. Statistics	1983-84
3. Plant Pathology	1982-83
4. Genetics and Plant Breeding	1982-83
5. Soil Science	1981-82
6. Farm Mechanics	1980-81
7. Animal Husbandry	1977-78
8. Physical & Analytical Chemistry	1977-78
9. Mathematics	1977-78
10. Bio-Chemistry	1974-75
11. Agronomy	1974-75
12. Horticulture	1974-75
13. Agricultural Extension	1974-75
14. Rural Sociology	1973-74
15. Agricultural Chemistry	1972-73
16. Agricultural Economics	1972-73
17. Botany & Zoology	1971-72
18. Organic Chemistry	1971-72

There are also cost constraints on curriculum reform. New courses require new (frequently imported) textbooks, additional laboratory equipment, new supplies of reagents and experimental materials, etc.

Prospects for systematic reform of teaching at BAU have received periodic attention for at least 10 years, Rhetorical adherence to a new "course/semester" (basically American) system is common among students and teachers. However, there have been no serious efforts to institute reforms. In fact the current system has deep cultural "resonance". (e.g. Exam results are considered a significant indicator of a person's professional quality 20-30 years after his graduation, and

* The Academic Council constitutes, in fact, only one challenge in the curriculum reform approval process. Changes must first be approved by the Board of Study of the appropriate teaching department (virtually all teachers in the department), then by the Faculty. After the Council, approval must also be given by the syndicate and Vice Chancellor.

** From : Salam, Hossain and Ali; "An Evaluation of Agricultural Education in Bangladesh", 1986.

young people are labeled "dull" or "brilliant" largely in terms of exam scores.) In addition, at least three other reasons can be adduced for resistance to change:

- 1) If student marks are related directly to performance in individual courses, teachers will become personally responsible for judging success or failure. Fears of student demonstrations and violence are, to some degree, legitimate, though students who do well under the new system will be disinclined to join demonstrations, etc.
- 2) University teachers will lose a significant source of income currently accruing to those who write, proctor, and mark year-end exams.
- 3) BAU will lose much of its academic authority over other agricultural teaching institutions (Bangladesh Agricultural Institute, Institute for Postgraduate Studies in Agriculture, and Patuakhali Krishi College) since individual teachers in those institutions will prepare, administer, and mark their own exams.

Undergraduate Opportunities for "Practical" Work

While classroom and laboratory teaching methods at BAU are stodgy and conservative, the material covered is broad and (when not outdated) technically sound. Lengthy syllabi for each course establish a kind of educational contract, and fairly explicit performance standards. Topics to be covered and concepts to be taught are well-known to students, individual teachers, and their teaching colleagues. Teachers whose students have consistently bad year-end results can (in theory, at least) be identified and encouraged to improve their teaching of standard subjects. Students know what to expect. Unfortunately, the system has many failings. e.g. It is weak in timely introduction of new material, particularly material reporting research results or agricultural trends from Bangladesh.*

Introducing "relevant" material will generally limit the teacher's ability to cover the syllabus, and the student's ability to prepare for exams. The system also seems to fail to give students a sense of professional responsibility, or clear motivation to learn materials as a source of lifelong skills.

* Ideally, teachers of most BAU courses should currently be examining implications of the August, 1987 floods for teaching in their subject areas.

One promising opportunity for increasing the relevance and practical value of BAU undergraduate education, without major systemic reform, lies with expansion of student understanding of agrarian systems and their future professional responsibilities through "fieldwork"*. Existing fieldwork activities are discussed below. Each is useful in its way; all should be expanded, improved, or made available to a larger group of students.

Agricultural Extension Courses: As indicated above, all students enroll in at least one Agricultural Extension course. However, approximately 22% "experience" the extension process only by listening to classroom lectures. Other students (even those in the Faculty of Agriculture who enroll in two years of "practical" extension courses) spend strikingly few hours in the field. With modest additional effort and resources, hours of fieldwork can be increased (to at least one three hour trip per week for students enrolled in "practical" extension courses) and quality of fieldwork experiences can be increased (particularly through closer coordination between Agricultural Extension professors and their colleagues in technical and social science fields).**

Agri-Varsity Extension Project (AVEP): This community action/extension/research project has a staff of four professionals on the BAU campus and 15 extension/development/research workers serving villages in a Union close to campus. The project partially fulfills its function as a "social laboratory" for BAU students; undergraduates in "practical" extension courses visit the area frequently to observe and learn. It would be useful, however, if students could be more fully engaged in research and extension activities at the site.

* Interviews with students indicate that this will also increase the intellectual excitement and challenge associated with a BAU education. Students generally like field experiences.

** Possibilities are exciting and unlimited. Prof. Abdul Halim of GTI and the Department of Agricultural Extension provided a useful example during one of our visits to the BAU campus in July. Having heard about a problem of insect infestation in a village close to the University, he quickly arranged for an Entomology Department colleague to accompany him and his students on their next scheduled field visit. The group went to the infested area, identified the insect pest, observed the damage, discussed the problem with farmers, and (presumably) discussed possible control methods.

Annual Study Tour: All fourth year students participate in a six day study tour.* They settle (in groups of 10, accompanied by two faculty members) in one upazila and study its agricultural production systems and problems. For students from urban or non-agricultural background, this constitutes a significant opportunity to learn first hand about the people they will serve during their professional careers.

Internships for New Graduates: In 1982, by making creative use of PL-480 funds, the Agricultural Extension Department arranged for 25 bright students in the Faculty of Agriculture to take field internships soon after completion of their studies. Groups of four-six students and one faculty advisor were placed for three weeks at five BARI research stations. Students supervised planting of field experiments and carried out other field and analytical tasks. The experiment was universally praised, and has been repeated two or three times since. It is highly desirable to expand the program to all new graduates, and widen the scope so that students can work in a wider variety of professional settings, including extension offices, rural bank branches, private plantations, etc.

Missed Opportunities: Too little is done to routinely incorporate field experiences into "theoretical" classroom teaching. With modest additional effort and resources, far more can be done. In Agricultural Economics courses, articulate farmers can be brought to the classroom to be cross-examined on farm management strategies. Students in Soil Science laboratory courses can go to assigned sites to collect their own samples. Students of Entomology or Plant Pathology can "solve" an insect or disease problem in nearby villages. Veterinary science students can set up village clinics. Food Technology students can carry out an economic survey of food processing plants. Farm Power & Machinery students can purchase local plows and, within cost constraints, develop a better model.

Other underused opportunities for introducing BAU undergraduates to "practical" work are research and extension activities in Mymensingh and adjacent districts. These include: Farming Systems Research sites operated by BAU at Kazirshimla and Naogaon; Multi-Location Testing Sites operated by BARI at Muktagacha and Phulpuri; and the Bangladesh Institute for Nuclear Agriculture (BINA), and Fisheries Research Institute (FRI), both adjacent to the campus. Several years ago, BAU and DAE officials discussed a scheme under which BAU would accept responsibility for extension activities in greater Mymensingh District. Now that BAU is located in a physically-reduced, "lesser" Mymensingh, this proposition should be re-examined.

* If funding is available Department of Agricultural Extension faculty plan to expand to tour to 10 days.

The University Prospectus refers to an "Earn and Learn Program",* but few students hold jobs on the campus. The administration should consider filling vacant third and fourth class employee positions with part-time student workers. Students could be usefully assigned to positions as laboratory assistants, clerical workers in the library, laborer/research assistants on experimental plots, and data processing assistants. Graduate students can serve as field interviewers and teaching assistants. This would make it easier for relative;y poor students to attend BAU, and would give significant number of students a partial introduction to their professions. It might also improve the quality of campus services.

Graduate Education

At present, BAU has a large and growing number of M.Sc. students. During the present year roughly 400-500 new M.Sc. students were admitted, and about 600-700 are actively pursuing M.Sc. degrees. All M.Sc. students at BAU receive a small stipend.** Thus many students regard M.Sc. study as a refuge or "second best" alternative to finding scarce public sector jobs. Many students abandon their M.Sc studies as soon as a job is offered.

Although all M.Sc. degree holders complete a thesis, funds for support of this research are severely limited.+ Most students are restricted to library work or very simple laboratory problems. Beyond thesis preparation, M.Sc. students find little emphasis on "practical" or "fieldwork" studies. Students in Agricultural Economics are examined wholly on theoretical topics, while testing on "practical" topics is limited to 12.5% of total exam points for students in other fields.++

In-Service Training

BAU has two facilities for in-service training of government bureaucrats, rural officials, and other workers in agricultural production and rural development.

* BAU Prospectus, 1982-83

** Tk.275/month for first class B.Sc. degree holders, Tk.250 for others.

+ M.Sc. students receive a total of Tk.750 to cover costs of data collection and thesis preparation.

++ BAU Prospectus, 1982-83

The Graduate Training Institute (GTI) was established, under IDA funding, in 1976. The GTI Director, Dr. Abdul Halim, also holds a teaching appointment as a Professor of Agricultural Extension. Eight faculty members are seconded to GTI from various BAU academic departments. GTI provides training in a variety of fields, to a variety of agricultural professionals. In 1985-86, training courses included:

TABLE 8: GTI TRAINING COURSES, 1984-86

<u>Field</u>	<u>Trainees</u>
Farmer's Workshop	Farmers
Crop Production Technology	SMOs of DAE
Potato Production Technology	DAE Block Supervisors of Mymensingh District
Administration, Office Management, & Communication	BAU Graduates--Ag. Econ, Fisheries, & Agriculture
T&V System of Extension & Management	Sri Lankan Extension Officers
Short Course on Descriptive Statistics	Officers of Various Organizations
Pump Awareness	Officers of Various Organizations
Banking	BAU Graduates--Ag. Econ.

438 trainees were given a total of 3500 person days of training.

GTI is a unique training institute in at least two ways: 1) It benefits directly from the knowledge and teaching skills of a large university faculty. 2) It provides opportunities for information feedback from professional experience to undergraduate education.*

* i.e. BAU teachers give lectures or teach short-courses at GTI. Through in-class and out-of-class interaction, they learn about the problems, concerns, and experiences of agricultural professionals working in Bangladesh. Ideally, they use this information to improve their teaching of undergraduates by: a) introducing new, relevant information into their courses, b) re-designing courses to better equip undergraduates for the professional challenges they will eventually meet.

The Agri-Varsity Extension Project was also established in 1976, to carry out action research on the agricultural extension process, and to provide training to agricultural paraprofessionals, farmers, and other village residents. Trainees under AVEP have included: Ansars (a "national guard" force), members of the Village Defense Party (another paramilitary group), members of BRDB-sponsored cooperatives, and farmers. Until now, AVEP has made limited use of BAU faculty and students as trainers in offering these training courses. Use of BAU faculty can tap significant technical and teaching skills and also facilitate significant feedback of information into undergraduate teaching and faculty research. Imaginative use of M.Sc and Ph.D. students as trainers will familiarize young professionals with their future clients and subordinates.

Challenges to Improved Teaching at BAU

BAU faculty members have the human resources necessary for improvement of teaching. The level of technical knowledge is generally high (though many older faculty can benefit from refresher seminars, and all faculty will benefit from an upgraded library). Teacher:student ratios are extremely favorable, so that moderate teaching loads can generally be combined with small class sizes. Classroom space is adequate* and most faculty offices are sufficiently large to host small seminars. The University Farm is large enough to handle a much larger volume of experimental work, and close enough to campus so that students can walk to the fields to observe research-in-progress.

Bangladeshi Universities follow the British tradition of highly specialized training at the undergraduate level, rather than the American "liberal arts" tradition.** Thus BAU

* BAU administrators take a different view, but by the standards of American State Universities, classrooms are lightly used. Lectures and laboratory sessions are generally held between 9:00 a.m. and 4:00 p.m. with a lunchtime break during which virtually all classrooms and laboratories are empty.

** BAU students take no courses in history, literature, philosophy, or foreign languages. They are limited to mathematics, pure sciences, and agricultural disciplines.

students are exposed to at least twice as many classroom and laboratory hours in their major subjects as their American counterparts. In addition, because undergraduate courses are few and highly standardized, teachers have the opportunity to devote considerable time to: selection of texts and background reading materials, developing case studies and other classroom teaching resources, arranging for short field trips, and otherwise enriching BAU teaching, in the knowledge that their time is not being wasted on a course that will be offered once or twice and discontinued.

With donor assistance, much can be done to support improved teaching at BAU. Modest funding will facilitate capital purchases (e.g. laboratory equipment; slides, films, and videotapes; video production equipment; case studies and teaching materials; etc.) and technical assistance (e.g. teacher/consultants brought from U.S. agricultural universities for two-three months to advise departments on curriculum design and development of teaching materials).

BAU students want better teaching. During interviews they expressed a desire for: better equipped laboratories, more Bengali textbooks, more field experiences, more case materials directly relevant to Bangladesh, more interesting lectures, etc.

However, optimism that the system can be improved, must be tempered by an understanding of system conservatism. The present academic system includes: committee-approved texts and reading lists; standard syllabi; an approval process that begins with Boards of Study and then passes through Faculties, Academic Council, Syndicate, and Vice-Chancellor, and lacks: elective courses, seminars, tutorials, and opportunities for students to change their courses of study. It is inherently conservative. In addition, BAU academic programs are embedded in a cultural system that understands and values the present syllabus/examination system. Parents, employers, and alumni will be strongly inclined toward suspicion of major changes in the teaching system.

Proposed changes in teaching at BAU will not meet impassable resistance, but will encounter numerous bureaucratic obstacles. In cases of moderate change, the process will be reasonably short, and each step will present moderate, predictable difficulties. In cases of systemic reform, the process will be long, and each step will be taxing and unpredictable. Table 9 provides a catalogue of possible changes in the BAU teaching system and probable bureaucratic difficulties associated with each:

TABLE 9: POSSIBLE CHANGES IN THE BAU TEACHING SYSTEM AND LIKELY SOURCES OF RESISTANCE

<u>Project Changes</u>	<u>Approval Process</u>	<u>Sources of Resistance</u>	<u>Impact on Educational Quality</u>
<p>Minor Changes: Improvement of lecture notes; incorporation of new and more relevant examples in lectures; provision of classroom handouts; use of more advanced technology--i.e. overhead projectors, video, etc; greater use of case studies, classroom discussion, and Q and A sessions. More fieldwork.</p>	<p>Individual teachers can adopt these changes, though those who teach different sections of the same course may wish to coordinate their efforts.</p>	<p>Students will generally welcome "non-participatory" changes as long as syllabus requirements are met and their ability to pass year-end exams is not impaired. Participatory changes will meet some resistance from students; faculty members who persist in stodgy methods will be resentful.</p>	<p>Substantial positive impact with relatively little bureaucratic resistance. Impact will be greater with major system change.</p>
<p>Moderate Changes: Selection of new textbooks and introduction of different supplementary readings. Decision to use additional Bengali reading materials and more Bengali in lectures in a particular course</p>	<p>Board of Study, (Teachers in concerned department).</p>	<p>There may be differences of opinion in a Department about how a given course should be taught, but these can be bargained out. Students will not resist, since it won't obviously affect their learning experience. They will welcome Bengali texts or reading materials.</p>	<p>Moderate positive impact through updating specific technical knowledge, making some subjects more accessible to students, etc.</p>
<p>Major Changes: Significant alteration of course syllabi. Deletion of old courses, addition of new ones. Changes in distribution of examination points. Introduction of elective courses.</p>	<p>Board of Study, Faculty, Academic Council, Syndicate, Vice Chancellor, Employers (government agencies lobby strongly for, or against some changes).</p>	<p>Strongest resistance will be in the Academic Council, where personal rivalries and inter-departmental jealousies will be mingled with genuine concerns for "quality education" and "student welfare."</p>	<p>Strong positive impact, particularly if this kind of work can be undertaken routinely, as part of constant "renewal" process.</p>
<p>Radical Changes: Introduction of the "American" system, with "stand alone" courses, more electives, etc. Introduction of a hybrid system, with less emphasis on year-end exams and greater emphasis on performance in particular courses.</p>	<p>Board of Study, Faculty, Academic Council, Syndicate, Vice Chancellor, Chancellor (President) and wide public discussion.</p>	<p>Changes of this order would be widely discussed in the press. There would be widespread resistance and some support. Initial supporters are likely to get cold feet.</p>	<p>Possible high positive impact. But high risk. The syllabus/exam system provides source of discipline for students and teachers in present system.</p>

IV. FACULTY AND GRADUATE STUDENT RESEARCH AT BAU

General Observations

A substantial amount of applied research is carried out at BAU. A recent report* covers a substantial portion of ongoing work in the Faculty of Agriculture and some work in the Faculty of Animal Husbandry. A total of 26 scientists are involved. Approximately 45-50 on-campus projects are ongoing during any academic year. The quality of research seems reasonably high, considering severe funding and equipment limitations, and reasonably well-grounded in the needs of Bangladesh agriculture.

Research Administration

Research at BAU is carried out under the auspices of several organizations:

The Bangladesh Agricultural University Research System (BAURES) was established in 1984 to administer and coordinate all aspects of faculty research. The BAURES Director has administrative authority roughly equivalent to that of faculty Deans. He administers the University's internal grant program; reviews proposals for external funding and sends them to appropriate granting agencies; maintains liaison with other research organizations; and organizes conferences and seminars.

The Committee for Advanced Studies and Research (CASR) is responsible for administration and coordination of graduate student research.** The Director, soon to be re-designated the Graduate Dean, administers a small fund for support of Ph.D. research and another fund which provides monthly stipends to M.Sc. students.

The University Grants Commission (UGC), part of the Ministry of Education, is the central government department responsible for funding and regulating universities. In addition to a major role in formulating BAU's overall annual budget, the UGC provides small research grants to researchers at BAU and other universities.

The Bangladesh Agricultural Research Council (BARC) manages several competitive grant programs, coordinates research activities among institutions working in the same research areas, convenes workshops and symposia, establishes research priorities and agendas, and sets agricultural research policies for Bangladesh.

* BAU Research Progress

** CASR is also responsible for coordination of M.Sc. programs, and for admission and examination of Ph.D. students.

Current Funding Sources

Faculty research is funded by modest grants through BAURES and BARC, small grants from UGC, supplementary research support from PL-480 reflow funds, and occasional larger grants from aid donors and international research institutes. Each of these sources is described below:

BAURES: University research funds are administered by BAURES under a formal competitive system. Each proposal is subjected to (ostensibly anonymous) peer review.* During the current year, six ongoing projects and 14 new projects have been funded. The median grant size is Tk.100,000. Grantees can apply for: (1) salaries and allowances - this includes honoraria equal to one month of salary for faculty researchers, and salary and allowance for research assistants, field laborers, etc.; (2) office supplies; (3) travel and transportation; (4) fuel, oil, and maintenance; (5) field and laboratory expenses - including chemicals and glassware, "inputs" (fertilizer, seed, experimental animals, etc.), and "non-capital" equipment; (6) monitoring and evaluation costs; (7) printing of reports; (8) contingencies; and (9) capital expenses - this includes furniture, equipment, motorcycles/bicycles, and vehicles.

When projects are approved, submitted budgets are usually reduced 20-25%. Researchers are seldom allowed capital expenditures beyond a few thousand taka. The Director of BAURES, Dr. M.A.A. Khan estimates that projects unfunded, but worthy of funding, each year are roughly equal to the number which are funded. A major complaint by BAU faculty against the BAURES grant approval process is that reduced funding and arbitrary cuts in project length result in de facto re-design. (i.e. Experiments originally considered integral to overall project design must frequently be cut.) Researchers are also concerned about their inability to purchase essential, relatively inexpensive research equipment.

BARC - About six-eight BARC-funded projects are currently being carried out on the BAU campus. A similar number of applications are in the review process. BARC funding is slightly more generous than BAURES (average grant approximately Tk.150,000-200,000), but also severely restricts capital expenditure. BAU researchers complain most frequently about the slowness of BARC procedures. The waiting period between proposal submission and final approval or disapproval is 14-20 months. BARC disbursement procedures are also slow, and researchers are often out of pocket or substantially delayed in their research efforts, while they wait for funds to be transferred to BAU and disbursed.

* With only 380 potential applicants on campus, it can be assumed that anonymity is seldom attained.

UGC - The Grant Commission provides very small grants, not exceeding Tk. 50,000, over a three year period. The grants provide little or no support for field or laboratory work, but cover costs of library research, data analysis, writing, and report production. Perhaps 8-10 BAU teachers are currently working under UGC grants.

PL-480 - Food For Peace reflow funds are a valued, flexible source of support for BAU research. They are used to make up shortfalls in BAURES projects when the University finds it necessary to cut recurring expense budgets midway in the fiscal year.

Foreign Donors and International Research Institutes - Over the years, BAU researchers have received funding from a number of international sources. Unfortunately, BAURES does not keep an up-to-date inventory of current and past research financing. However, during campus visits, ongoing or recent research projects funded from the following sources were identified:

- o International Atomic Energy Association - Research on Animal Nutrition and Application of Azolla in Rice Production.
- o Ford Foundation - Research on Irrigation Management and various Social Science topics.
- o UNICEF-Research on Formulation of Weaning and Relief Funds.
- o DANIDA - Research on Oil Seed Breeding and Production.
- o FAO - Research on the Soil Dynamics of Sulphur and Zinc.
- o CIDA - Studies of Potash Fertilization.

International organizations which have previously funded research at BAU include: USAID, IDA, ILO, and the International Development Research Center (Canada).

Private Sector Funding - Recently, and perhaps for the first time, BAU researchers have accepted funding from a private firm to test the effectiveness of a commercial product. Lever Brothers (Bangladesh) Ltd. has paid two Horticulture Department and one Agronomy Department researchers to test the efficacy of "Mixtalol" (a mixed alcohol product developed in India), in enhancing productivity of several vegetable and cereal crops.

An Overview of Faculty Research

Roughly 45-50 faculty research projects are currently active on campus. Funding sources are as follows:

BAURES - 20 projects
BARC - 6-8 projects
Foreign Donors - 10-12 projects
UGC - 8-10 projects.

Table 10 lists current BAURES projects, and gives the flavor of ongoing research at BAU. In addition, readers are provided with a "sampler" of researchers and their current work.

Dr. M.F.A. Mollah is an Assistant Professor in the Department of Fisheries Biology and Limnology. He recently completed his Ph.D. (1983) at the Universiti Sains Malaysia, on a Commonwealth Scholarship. At Penang he did his dissertation research on "induced spawning and larval culture" of a catfish species native to Malaysia. After his return to Mymensingh, he successfully applied for a BARC research grant, and is now carrying out similar research on a Bangladeshi catfish species.

Freshwater fish eggs can be readily gathered in rural Bangladesh, but during the larval stage fish cannot be identified by species. Since commercial fish production is dependent on stocking ponds with correct species, it is desirable to speed up the spawning and developmental process to the point where fingerlings can be identified by species. Dr. Mollah's work has already developed promising procedures for doing so. His feeding experiments, using a variety of natural and artificial feeds, will also provide useful guidance for efficient culturing of fish under pond conditions. He is also experimenting with culture of tubeworms, a favored food for catfish under natural conditions. Tubeworms can be collected in large quantities during the monsoon rains; however, the economic feasibility of fish culture will be increased if they can be cultured in other seasons.

Mrs. Jinnat Ara Begum is Associate Professor and Head of the Department of Food Technology and Rural Industries. She holds an M.S. from the University of Wisconsin. Over the past several years she has carried out promising experiments in solar drying, and formulation of special weaning and relief foods. Funding has come from BARC, DANIDA, and UNICEF.

Professor Jinnat has designed and arranged for construction of a passive solar dryer (a small wooden structure) which produces daytime heats of 140-160°F, and is capable of drying 80 kg. of sliced potatoes per day. Potatoes and other dried vegetables are used in formulation of weaning and relief foods which are cheap, palatable, and made with locally-available ingredients. She also supervises field testing of the foods, which are prepared according to a variety of recipes.

TABLE 10: CONSOLIDATED STATEMENT OF BAURES-SPONSORED
RESEARCH PROJECTS FOR 1987-88

A. Ongoing Research Projects:

1	Integrated Oilseed Research Project	Tk.	8,11,946/-
2.	Breeding of Vegetable Crops		1,66,335/-
3.	Survey of Diseases of Some Important Fruit & Vegetable Crops of Bangladesh		1,65,390/-
4.	Importance of Sericulture and Cottage Industries under Local Conditions		1,92,702/-
5.	Production Technology of Selected Banana Species		1,00,470/-
6.	Breeding Wheat for High Grain Yield, Early Maturity, and Adaptability		1,58,000/-

B. New Research Project:

1.	Developing Seedless and High Yielding Cucurbits	Tk.	64,160/-
2.	Food Legume Improvement Program		1,62,300/-
3.	Investigation into Bacterial Diseases of Potato in Bangladesh		76,700/-
4.	Evaluation of Group Approach in T&V Extension System		35,700/-
5.	Improvement of Cauliflower with Special Emphasis on Seed Production		59,400/-
6.	A Study on the Development of Technology for Fodder Production within Existing Cropping Systems		1,03,110/-
7.	Epidemiology of Diarrhoeal Diseases of Buffaloes and Use of ELISA, RIA and RNA Electropherotype Techniques for Diagnosis of Rotavirus Induced Diarrhoea in Buffaloes in Bangladesh		83,720/-
8.	Investigation of Infertility in Cows by Endocrine Provocation Tests at the BAU Dairy Farms		1,78,570/-
9.	Studies on the Peripheral Concentration of Reproductive Hormones & Their Relationship to Semen Qualities in Bulls		1,24,940/-

10. Nutritional Evaluation of Available Food-stuffs in Bangladesh and Formulation of Balanced Ration for Livestock	96,190/-
11. Epidemiological Investigation of Coccidiosis in Chickens under Existing Commercial and Backyard Farming Systems in Bangladesh	1,16,345/-
12. Experimental Production of Duck Plague Vaccine & its Monitoring in the Field	99,845/-
13. Commercial Viability of Marketing of Coconut in Selected Coastal Regions of Bangladesh	46,000/-
14. System Development for Reduction of Energy Requirement in Field Operations	80,220/-

Dr. Lutfur Rahman is a Professor in the Department of Genetics and Plant Breeding. He received his Ph.D. at the University of Prague, and has carried out and coordinated a series of vegetable breeding activities. Research funding has come from BAURES and PL-480 funds. Dr. Rahman works mainly with tomatoes and mustard, and occasionally with eggplant and small peas. (His Agriculture Faculty colleagues are carrying out breeding work with wheat, rice, seedless kumra, tobacco, maize, chickpeas, brassica, peanuts, and sesame.)

Because BAU lacks regional stations, Dr. Rahman must use considerable ingenuity in finding experimental field space for carrying out multi-location testing. For example, in his work with tomatoes and mustard he has borrowed land for field tests from the Jute Research Institute, the Cotton Board, and the Mennonite Central Committee. Two mustard varieties have already been reviewed and released for general use by the Seed Certification Board. One mustard variety has found an excellent market and is widely planted. Dr. Rahman has developed two tomato varieties which he believes are ready for release, and two others which will be ready next year. However, he believes that BAU-developed crop varieties do not receive a fair hearing from the Seed Certification Board. He is convinced that some requests for additional field testing are motivated more by institutional jealousies and bureaucratic politics than by valid scientific concerns.

Two other activities, which combine applied research with effective service to Bangladeshi agriculture, are worth noting here. Dr. M. Equb, Professor in the Department of Soil Science, has organized the Agriversity-Humboldt Soil Testing Laboratory. For a small fee, Laboratory staff make extensive analyses of samples mailed in by extension workers, farmers, NGOs, etc., and offer planting and fertilizer recommendations. Dr. Equb has also developed a portable soil testing kit which is sold at cost (Tk.700) to interested officials, organizations, and individuals. Dr. A.F.M. Sharafuddin, an Associate Professor, Department of Horticulture, has worked for several years collecting and testing various strains of rhizobia. He has identified strains most appropriate for peanut and soybean production in Bangladesh, and now produces rhizobia in substantial quantities for commercial sale. The Mennonite Central Committee is a major customer.

One major BAU research activity has not yet been described. The Farming Systems Research Development Programme (FSRDP), was initiated in the early 1980s, and is funded by BARC as part of the national FSR network. On-farm research is carried out in two upazilas (Trishal and Karimganj) under the supervision of Dr. S.M.A. Hossain, an Associate Professor in the Department of Agronomy. Thirteen BAU faculty members are associated with the project on a part-time or voluntary basis.

These Investigators carry out research in one farming systems component, such as "crops", "fisheries", "economics", or "water management". The project has a full-time scientific staff of 12, an office staff of five, and a few student volunteers who help with field work. The 1986-87 work program at Karimganj included 25 "on-farm" production experiments, each carried out in cooperation with four-six farm households, and numerous surveys, demonstration programs, and monitoring activities. At Trishal, the 1986-87 program included 32 production experiments, as well as surveys, monitoring activities, and demonstration programs.

Training is offered by FSRDP staff, mainly to farmers in the research areas and other FSR workers. Few BAU students visit the sites. This represents a significant lost opportunity, since introduction of students to ongoing experiments and surveys would provide very useful insights into the everyday complexities of farming in Bangladesh.

Problems in Faculty Research

BAU faculty researchers consistently identify several problems in their pursuit of research. These are: 1) lack of funding, 2) inadequate equipment, 3) poor library facilities, and 4) awkward administrative procedures. Each problem area will be covered in turn.

Lack of funding is the fundamental problem of BAU. This is no less true for teaching, building maintenance, or provision of student services, than it is for research. Many researchers have viable proposals, but are unable to find funding. Others are successful in getting proposals approved, but find that grant requests are routinely reduced by 20 or 40%. Contingency lines are small, and unexpected expenses frequently come from the researcher's pocket. Researchers work in poorly maintained facilities, with inadequate equipment, assisted by under-trained personnel. Additional funding would do much to alleviate these problems.

Research equipment is universally in short supply. M.Sc. students in the Faculty of Agriculture have great trouble getting access to fine balances. Two of the fondest wishes of the Dean, Faculty of Fisheries are for a deep tubewell (cost-Tk.150,000-175,000) to ensure that experimental fishponds are full year around, and a pH meter (cost-Tk.70,000) to carry out basic analyses of water samples more expeditiously. (Faculty members currently use the pH meter at the nearby FRI.) M.Sc. students in Agricultural Engineering are sent to the Islamic Centre for Vocational and Technical Training at Joydebpur, to complete their research while using the superior equipment there. There is only one mainframe and one personal computer on campus. Even calculators are in short supply, and much statistical/analytical work is done entirely by hand.

Researchers in the Department of Animal Nutrition are unable to directly analyze all of the minerals, amino acids, and fatty acids in animal foodstuffs. Some essential measurements can be made indirectly, but at considerable cost to research progress. The Department would benefit greatly by procurement of an amino acid analyzer and basic equipment for gas chromatography. Dr. A.M.M. Tareque of the Animal Nutrition Department has been trained in the use of radioactive isotopes for studying animal nutrition. However, he is unable to pursue this speciality, due to lack of equipment. Students in a Plant Genetics laboratory were observed using microscopes with powers of magnification inadequate for proper examination of the plant nuclei they were studying.

BAU is sometimes criticized for inadequate maintenance of scientific equipment. While there is some justification for this position, readers should also consider the following extenuating circumstances: Much of the equipment has operated in a hot, humid climate, without air conditioning, for 15-20 years. Many pieces have already been repaired several times, and it is no longer possible to find replacement parts for out-of-date equipment. Many instruments are shared by teacher/researchers, Ph.D. and M.Sc. students, and inexperienced undergraduates. It is not surprising if equipment is sometimes inadvertently damaged.

The BAU library is severely understocked. With 305 current periodicals and about 100,000 reference volumes, it is inferior to the library of a second rank state university in the U.S. by a factor of 10. The library's annual foreign exchange budget of Tk.1,500,000 is barely adequate to maintain current journal subscriptions. (In addition, BAU faculty have placed requisitions for 700 other journals.) Most reference books are donated by The Asia Foundation or the British Council.* Services are also unsatisfactory. Seating is inadequate, the library is open only 70 hours per week,** and cataloguing and re-shelving are slow. It is difficult for patrons to find adequate professional help in using limited resources the library does offer.

Administrative procedures are also frustrating to researchers. They are essentially 19th century procedures which emphasize central control and fiscal probity, and are generally inappropriate for administration of 20th century research. Cash advances under approved grants require one-three weeks for processing and there are very low (Tk.750) limits on advances. Researchers are frequently out of pocket

* This means that selection is "catch as catch can" and that BAU's needs are only roughly met.

** The librarian would like to expand this to 106 hours.

for emergency expenditures, and spend an inordinate amount of time explaining payment problems to creditors. Expenditures of Tk.75 or more must be pre-approved by the Vice Chancellor and capital procurements of Tk.5,000 or more must be made by the University Tender Committee.

In addition to these frequently-identified problems, BAU researchers suffer from lack of national clout and international exposure. As officers of the Ministry of Education, BAU teachers are outside the bureaucratic mainstream of agricultural research. This works against them in numerous subtle ways. e.g. They are passed over for short-term training activities, or their improved vegetable varieties are reviewed unsympathetically by the Seed Certification Board.

Associated with a temporary "have not" organization, which lacks foreign donors, BAU faculty have few expatriate visitors, enjoy limited access to international research grants, find great difficulty in getting papers published in foreign journals, and are seldom invited to international meetings. Thus, numerous opportunities are missed for raising and maintaining professional standards.

Graduate Student Research

All successful M.Sc. students at BAU prepare theses as a basic degree requirement.* With 4-500 M.Sc. students admitted in the current academic year, this places a heavy burden on BAU faculty and facilities.** All admitted M.Sc. students receive monthly subsistence stipends of Tk.250-275. In addition, all students receive a minuscule thesis grant of Tk.800.

The CASR should seriously consider phasing out subsistence stipends, and introducing a much smaller number of teaching or research assistantships, to be filled through open competition, and compensated at Tk.1,000-1,200 per month. The CASR should also consider phasing out present thesis awards, and establishing a grant competition in which the best thesis proposals are funded at Tk.5-15,000.

BAU has a small number of Ph.D. students on campus, perhaps 15-20 at present. Many of these are BAU faculty members, temporarily on leave. Others are seconded to Mymensingh from agricultural research organizations (BRRI, BARI, etc.). Ph.D. candidates generally receive their base pay (no allowances) and

* This is not true in some other Bangladeshi universities, where many students complete master's level training solely on the basis of coursework and examinations.

** The CASR should immediately consider placing strict limitations on M.Sc. admissions.

are eligible to compete for monthly stipends of Tk.1800 from BARC. Thus, subsistence costs of Ph. D. work are adequately covered.

However, dissertation research is dramatically underfunded.* The CASR has a total grant fund of about Tk.300,000 per year for this purpose, and there are few alternative sources. One Ph.D. student, a scientist seconded from BRRI, prepared a proposal for a three year project. The budget, not including instruments, was Tk.175,000. For the first year, CASR provided Tk.7,000 and he anticipates a total research fund of about Tk.21,000. He finds that faculty researchers are quite generous with time, equipment, research materials, etc., but that, underfunded as they are, they are "generous without any arms".

Another Ph.D. candidate, a BAU faculty member on leave, requested Tk.83,000 from CASR. They were able to arrange for a Tk.5,000 grant from the UGC. This student, like all his colleagues, will have to reduce the scope of his research, spend heavily from his own pocket, and apply great ingenuity in mobilizing equipment, research materials, and assistance.**

Challenges to Improved Research at BAU

There are probably fewer political/institutional barriers to improvement of BAU faculty research than to improvement of teaching. There are several reasons: 1) Students are not directly affected, and thus unlikely to object to new procedures or claim access to new resources. 2) Present procedures for selecting grantees and administering grant funds are cumbersome, but tend to slow down research, not stop it altogether. 3) Many faculty members are committed to research, and will pursue opportunities to do it in spite of underfunding and administrative complexities. Thus obvious interventions, which involve modest increases in funding for research, will meet little institutional resistance.

Efforts to alter conditions of graduate student research are more likely to arouse institutional impediments. For example, M.Sc. students will likely argue for greater financial support for thesis research of all students, and against competitive procedures for research grants. Most students will support creation of TA and RA positions, but will strongly oppose efforts to take away automatic subsistence awards.

* The scope of a dissertation project is at least as great as that of the average BAURES project (i.e. Tk.100,000 on average).

** M.S. students in agriculture in the U.S. must also adopt this approach. However, they are generally younger, have few family responsibilities, and operate in a far richer environment.

Table 11 suggests a rough framework for predicting feasibility of various interventions intended to improve BAU research.

TABLE 11, A TYPOLOGY OF RESEARCH IMPROVEMENT ACTIVITIES

	<u>Low Financial Cost</u> (\$/Tk.)	<u>High Financial Cost</u> (\$/Tk.)
<u>Low Institutional Cost</u> (Weak Bureaucratic/ Political Resistance)	<ul style="list-style-type: none"> o Support for exchanges, sabbaticals, in-country, research-related travel o Matching funds for faculty & Ph.D. research o Equipment grants to faculties. 	<ul style="list-style-type: none"> o A major TA contract, with several full-time TA contractors on the BAU
<u>High Institutional Cost</u> (Strong Bureaucratic/ Political Resistance)	<ul style="list-style-type: none"> o Convert subsistence stipends to competitive RA/TA positions (support w/matching grants) o Convert small, automatic thesis grants to competitive grant program for M.Sc. students (support with matching grants). 	<ul style="list-style-type: none"> o A major TA contract, with several full-time TA contractors and campus, and an agenda of policy and administrative reform.

V. SOME CONSIDERATIONS FOR USAID

Before making a final decision about support for institutional strengthening at BAU, USAID should consider some strategic issues. These are issues associated with the "assistance/policy interface" and the "weakness through strengthening paradox".

The Assistance/Policy Interface

USAID should answer two complementary questions. 1) Are there promising interventions that can be made without the necessity of significant administrative or policy change? 2) Are there interventions requiring associated administrative and policy change that are so promising they should be adopted anyway?

Any thoughtful observer who visits BAU for a day or two will note resource shortages and programmatic weaknesses and begin thinking about possible interventions. Generating a long list of interventions is easy, identifying those which require little or no administrative/policy change, and are thus "safe", is a considerable challenge. Tables 5, 9 and 11, with associated discussions, offer some preliminary guidance. Even without further detailed analysis, it is possible to devise some Rules of Thumb:

- o BAU faculty members are committed to research, while students and other staff members have little involvement with it. Procedures for administering research are a bit cumbersome, but they are in place. Generally, additional resources will not cause institutional jealousy in other research institutions. Thus, it is "safe" to provide BAU with moderate additional resources (funding, equipment) for support of research.
- o Many BAU faculty are devoted to teaching, and would like to be more effective. Students would be responsive to better teaching, at least to the extent it doesn't arouse their anxiety by interfering unduly with the present academic system. Many useful things can be done--new teaching equipment, increased "fieldwork" experiences, new teaching methods, new teaching materials--which require only minimal changes in the present teaching system. Thus, there are a number of "safe" activities in teaching improvement which can be usefully supported by TA and additional funding.

However, it is tempting to be guided by need rather than caution, and to plunge in to some of the most challenging areas of university administration.

It is tempting, for example, to assist with reform of BAU's revenue generating capacity. A 20 or 30 fold increase in student fees would be affordable for most families and would

increase annual funding under direct control of BAU from the present level of 1/2% to a more respectable 10-15%. It would also be attractive to consolidate the 20-30 separate fees that students currently pay into two-three larger payments. However, the former action is guaranteed to meet strong student reaction, and the latter would probably arouse the ire of a large number of redundant clerks. Many other tempting reforms--eliminating redundant third and fourth class employees, streamlining disbursement and payment procedures, cutting down on pre-approval procedures, etc.--are also likely to meet strong institutional resistance.

The system should be "challenged" only when probable payoffs are particularly high. It may be worthwhile, for example, to require BAU to formulate a stricter M.Sc. admissions policy, and to re-allocate present allowances and grants, rewarding a few energetic students with significant support, rather than offering small subsidies to all students. However, a kind of "sociopolitical cost/benefit assessment" should be carried out. Potential payoffs in terms of higher quality graduate education and research should be clearly indicated in advance, because it is certain that students not admitted under new admissions standards and students, and students not receiving grants, will protest and demonstrate.

The "Weakness through Strengthening Paradox"

In Bangladesh, where public resources are always severely constrained, there is a danger that major infusions of external resources over a long period will weaken rather than strengthen an institution. Specifically, the presence of a foreign donor may tempt central officials to withhold a portion of previously normal funding. e.g. Donor support for new research equipment at BAU may tempt UGC officials (and even central administrators at BAU) to strip Faculties and Departments of their present (very small) equipment budgets.

The solution suggested here (in specific recommendations offered in Section VI) is frequent, creative use of matching grants. Grants can be offered at 1:1, or some other ratio. They can be offered initially at high ratios, and gradually reduced over five-six years, to entice BAU, UGC, and other officials toward stronger, sustained support for programs which will strengthen teaching and research at EAU. For example, USAID should consider support for BAURES-administered research grants, but only for a Tk.1:Tk.1 basis initially, and over time the ratio, should fall to Tk.0.50:Tk.1.

VI. SOME RECOMMENDATIONS

BASIC RECOMMENDATION:

- o Design, approve, and implement a project for "institutional strengthening" at BAU

BAU is a well-established institution with a well-trained, committed faculty. BAU plays a fundamental role in training professionals for research and extension work, and an important subsidiary role in carrying out research. While BAU has administrative weaknesses characteristic of all Bangladeshi public institutions and is sometimes politically unstable, there are a number of useful interventions that can be made, which are not unduly reliant on present systems or unduly likely to exacerbate political instability.

STRATEGIC RECOMMENDATIONS:

- o Focus the project on those interventions which will improve teaching and research.
- o Assume the project will require modest funding of about \$1.0-1.5 million per year.
- o Field a core TA team of two people to monitor specific activities in teaching and research. Supplement their presence with sufficient funding for 15-20 short-term TA consultancies.
- o Use "educational selection" to procure the services of a Title XII university or one of the international development consortia (MUCIA, SECID, CID).
- o Where possible, avoid interventions that require significant administrative/policy change, and thus stir up time-wasting controversy.
- o Rely on matching grants wherever feasible, to ensure that USAID support doesn't drive central funding "below the trend line" for essential budget lines supporting teaching and research.

TACTICAL RECOMMENDATIONS:

- o In order to improve teaching:
 - Provide matching grants and TA to "improve the quality of classroom teaching". (Individuals and Departments would apply for grants to improve quality of teaching--better lectures, case studies, new laboratory manuals, greater use of A-V materials, etc.--without requiring extensive committee approvals for their introduction).

- Provide matching grants and TA for "curriculum improvement". (Similar to the activity above, except that extensive committee approvals are required for introduction of new materials, etc.)
 - Provide BAU faculty members who are working toward the Ph.D. degree at BAU with "Hybrid Ph.D. Fellowships" which enable them to study one-two years in a U.S. or Third Country Ph.D. program.
- o In order to improve research:
- Make substantial equipment grants (\$50,000-100,000) to each faculty.
 - Provide matching grants to BAURES for faculty research.
 - Offer matching grants for Ph.D. research.
 - .. Provide matching grants to support "distinguished" M.Sc. students. To provide in conjunction with specific reforms in present funding system.
 - Offer part-time TA to assist BAU in preparing proposals for international grant programs. (e.g. SCI and NAS programs).
 - Give matching grant support for "scientific outreach" to enable faculty to visit in-country research facilities, take sabbatical years at research stations, etc.,