

2-4 Project Implementing System

2-4-1 Organisation

(1) Government Agencies

When a development project is implemented at a university in Pakistan, the Planning and Development Wing of the Ministry of Education acts as the main government agency to contact about the project. Within the Ministry of Education, the University Grants Commission (UGC) is responsible for the routine management of the universities' budgetary and personnel affairs. The federal government's budgetary appropriations are allocated to the universities through this commission. The organisation of the Ministry of Education is as shown in Fig. 2-3.

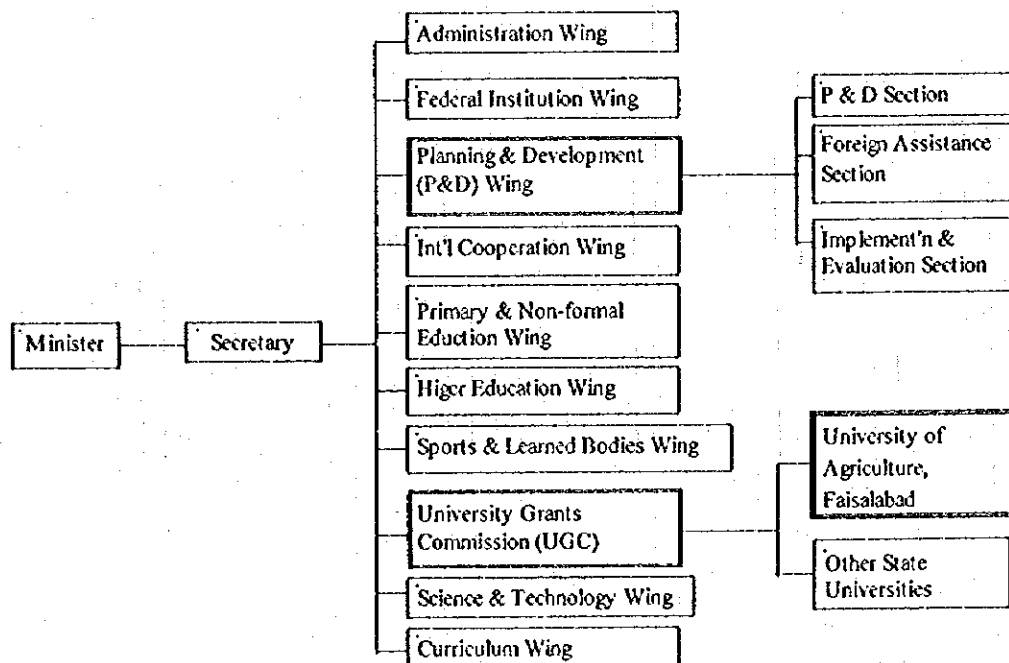


Fig. 2-3 Organisation Chart of the Ministry of Education

(2) Implementing Organisation

When this project is implemented, the University of Agriculture, Faisalabad, will operate and manage the items of equipment procured under this project as the organisation responsible for implementing this project. The organisation of the university is as shown in Fig. 2-4. As is often the case with other universities in the country, the governor of the province serves as the university's

UNIVERSITY OF AGRICULTURE, FAISALABAD

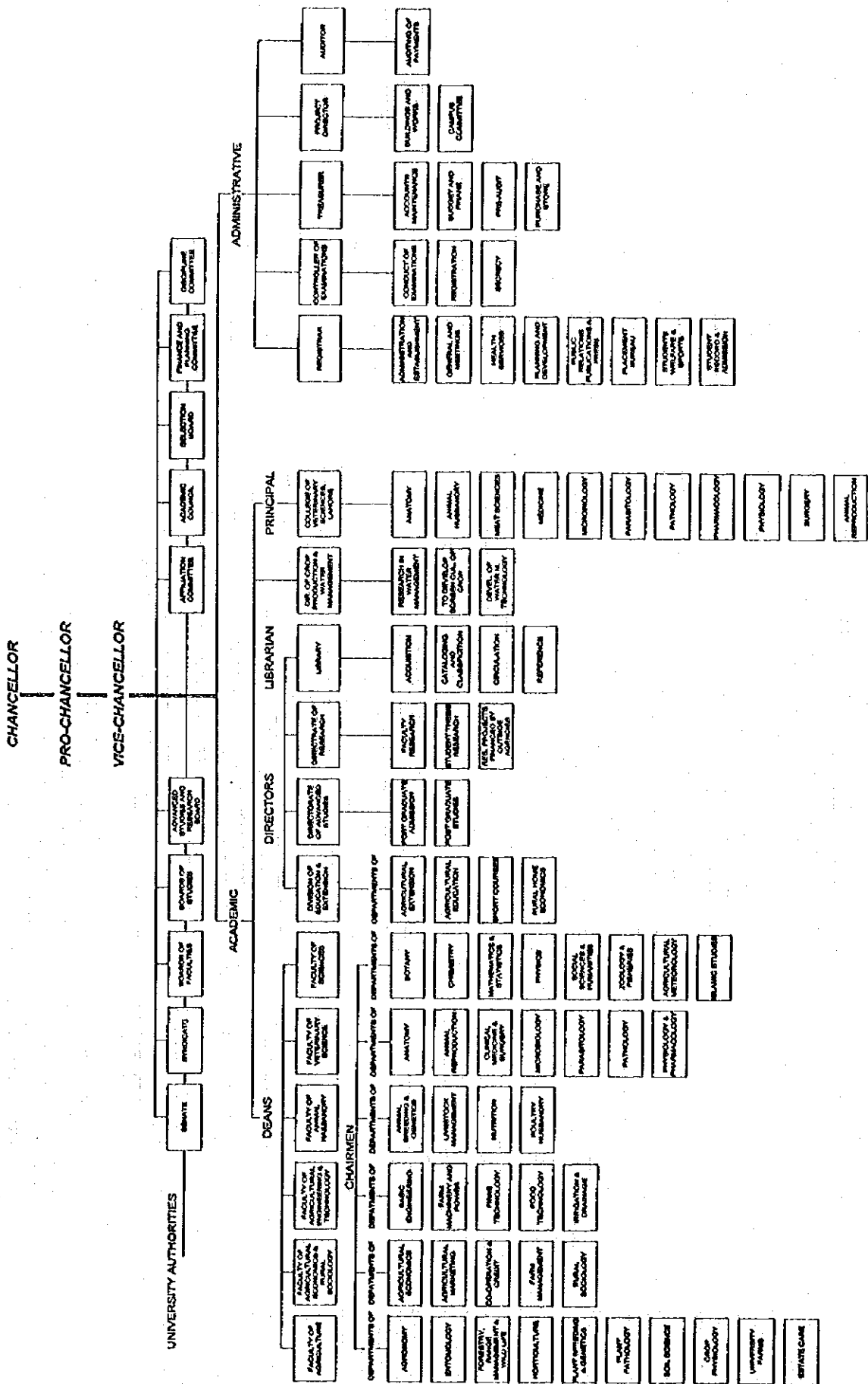


Fig. 2-4 Organisation Chart of the University of Agriculture, Faisalabad

chancellor ex officio, and the minister for agriculture of the provincial government as its pro- chancellor also ex officio. In actuality, the vice- chancellor exercises control over all affairs within the university. The deans of the faculties, the heads of the divisions and directorate and the principal of the college manage their respective organisations under the supervision of the vice- chancellor. The registrar, the accountant and the controller of examinations are responsible for office work management.

The university has an administrative staff of 2,014 (1,730 on the Faisalabad campus and 284 on the Lahore campus), of which 44 are officers. Each faculty and department has its own technical staff (lab. technicians, lab. assistants, junior lab. assistants with experiences of 10 years and over) to take charge of equipment operation, maintenance and management. There is a total of 175 technical staff working at the university laboratories.

2- 2- 4 Budget

Trends in the annual current budget of the University of Agriculture, Faisalabad, are as shown below.

Table 2- 5 Budget and Revenue Source of UAF

Budget of UAF (Rs. million)

Year	Personnel Expenses	Procurement of Equipment	Repair & Maintenance of Equipment	Utilities Expenses	Others	Total
1989-90	80.125	3.904	4.082	23.301	1.870	113.282
1990-91	92.868	3.139	3.762	25.617	1.770	127.156
1991-92	107.374	2.169	3.638	30.299	1.729	145.209
1992-93	118.249	7.164	3.336	30.750	1.586	161.085
1993-94	124.641	3.947	4.268	41.928	1.529	176.313
1994-95	149.444	7.139	4.689	43.911	0.020	205.203
1995-96	180.929	6.070	4.455	36.444	0.030	227.928
1996-97	189.124	6.400	5.675	37.311	0.030	238.540

Source of Revenue (Rs. million)

Year	Subsidy from Federal Govt.	Subsidy from Provincial Govt.	Tuition Fee	Research Contract etc.	Others	Total
1989-90	91.090		1.254		12.817	105.161
1990-91	94.900		0.798		12.578	108.276
1991-92	115.995	1.200	1.557		16.024	134.776
1992-93	118.680		1.130	4.000	16.971	140.781
1993-94	129.361		1.555	1.000	20.242	152.158
1994-95	138.416		0.689	2.500	24.207	165.812
1995-96	152.258		1.550		27.440	181.248
1996-97	206.056		1.600		30.884	238.540

At the university, the equipment repair and maintenance expenses account for about 2.5 percent of the annual budget of the university. The percentage has been on the rise in recent years.

The university requested the Government of Pakistan to increase by 3 million rupees its annual equipment maintenance and management expenses (recurring expenditure) when all the requested items of equipment have been procured. The increment accounts for about 1.4 percent of the university's annual current budget for fiscal 1994- 95. If the percentage of the equipment maintenance and management expenses (about 2.5 percent) is added to this percentage, the total is about 4 percent. It seems, therefore, that there will be no problem with budgetary appropriations for equipment maintenance and management. In Pakistan, the amount of a university's annual current budget is determined on an add- on basis. But additional budgetary appropriations for a development project (facility construction, equipment procurement, etc.) are made separately from the said arrangement. Annual budgetary appropriations for the University of Agriculture, Faisalabad, are made by the Ministry of Education through the UGC. These government agencies are in the process of discussing preferential budgetary appropriations for this project so that there will be no problem with the budgetary aspect of this project.

2- 4- 3 Personnel and Technical Level

At present, the university has a teaching staff of 501, of which 14 percent are professors, 14 percent associate professors, 21 percent assistant professors, and 41 percent lecturers and other instructors. By academic background, 38 percent are Ph. D.'s and 62 percent are M. Sc.'s, M. Sc. Hons.'s and M.A.'s.

As much as 41 percent of the academic staff of the University of Agriculture, Faisalabad, have doctor's degrees, many of them having taken their doctorate from universities in European countries and the United States. There are many cases where these members of the academic staff request those items of equipment which they used while studying in these advanced countries, and it seems that they have sufficient knowledge of state- of- the- art instruments and apparatuses. At the department of veterinary anatomy, a Japanese- made electron microscope was used for 10 years from the 1970s to the 1980s, and the instructors who took charge of its operation are still working at the university. In addition, the atomic absorption spectrophotometer is still in use at the department of agricultural entomology. In view of these facts, it is concluded that there will be no problem with the operation of the sophisticated instruments to be installed in the central laboratory.

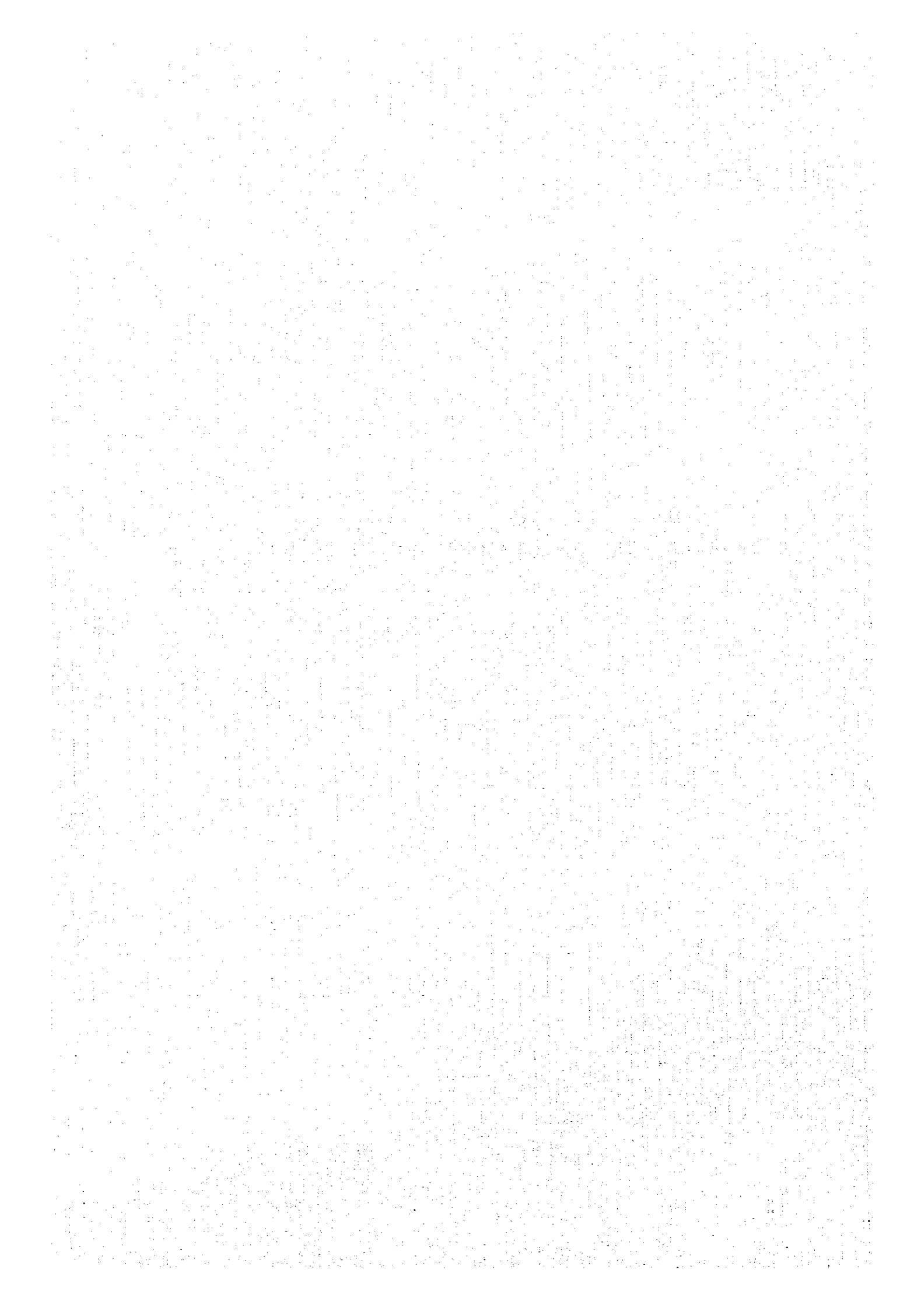
The total number of instructors and that of technical officers in each department of the University of Agriculture, Faisalabad, are as shown in Table 2- 6. It should be noted that the university is in the midst of working out ways to reorganise, and increase the total number of, its technical officers on the assumption that all the requested items will be installed as scheduled.

Table 2-6 Academic and Technical Staff of UAF

Faculty/Department	Prof.	Assoc. Prof.	Assst. Prof.	Lecturers	Others	Total	Ph.D.	M.Sc.	Tech. Staff
A. Agriculture	25	32	25	54	4	140	70	70	52
1 Agronomy	3	9	6	7	-	25	15	10	1
2 Soil Science	4	7	2	9	-	22	15	7	11
3 Plant Breeding & Genetics	5	6	1	7	1	20	10	10	14
4 Horticulture	3	3	5	9	-	20	6	14	5
5 Agricultural Entomology	5	1	6	6	-	18	8	10	8
6 Plant Pathology	3	5	0	8	-	16	6	10	7
7 Forestry, Range Management & Wildlife	1	1	3	6	-	11	5	6	2
8 Crop Physiology	1	0	2	2	-	5	4	1	2
9 Post-graduate Agri Research St.	-	-	-	-	2	2	1	1	2
10 Estate Management	-	-	-	-	1	1	0	1	0
B. Animal Husbandry	7	12	7	14	0	40	22	18	13
1 Animal Breeding & Genetics	1	2	1	4	-	8	5	3	2
2 Animal Nutrition	3	5	3	2	-	13	8	5	5
3 Livestock Management	2	3	1	7	-	13	5	8	4
4 Poultry Husbandry	1	2	2	1	-	6	4	2	2
C. Veterinary Science	9	12	17	16	0	54	29	25	23
1 Veterinary Anatomy	1	1	0	3	-	5	2	3	4
2 Clinical Medicine & Surgery	2	1	2	4	-	9	2	7	2
3 Veterinary Pathology	1	2	3	1	-	7	5	2	2
4 Veterinary Microbiology	0	2	3	2	-	7	3	4	3
5 Veterinary Parasitology	1	3	1	2	-	7	5	2	2
6 Physiology & Pharmacology	3	1	3	0	-	7	5	2	3
7 Animal Production	1	2	5	4	-	12	7	5	7
D. Agrl. Economics & Rural Sociology	3	12	9	14	0	38	10	28	0
1 Agricultural Economics	2	2	5	7	-	16	4	12	-
2 Farm Management	1	0	0	2	-	3	1	2	-
3 Cooperation and Credit	0	2	1	0	-	3	1	2	-
4 Agricultural Marketing	0	2	1	0	-	3	1	2	-
5 Rural Sociology	0	6	1	5	-	12	3	9	-
6 Socio-economic Research Cell	0	0	1	0	-	1	0	1	-
E. Agrl. Engineering & Technology	5	12	10	20	1	48	18	30	20
1 Basic Engineering	2	1	1	2	-	6	2	4	2
2 Irrigation & Drainage	0	3	2	5	-	10	4	6	1
3 Farm Machinery & Power	2	0	4	6	-	12	4	8	1
4 Food Technology	1	6	3	6	-	16	7	9	12
5 Fibre Technology	0	2	0	1	1	4	1	3	4
F. Basic Science	13	15	14	35	0	77	23	54	31
1 Botany	2	5	0	2	-	9	3	6	8
2 Zoology & Fisheries	4	0	4	2	-	10	8	2	3
3 Chemistry/Biochemistry	5	3	4	6	-	18	9	9	11
4 Physics	1	1	2	5	-	9	1	8	5
5 Agricultural Meteorology	0	0	1	2	-	3	0	3	1
6 Mathematics & Statistics	0	6	0	10	-	16	2	14	3
7 Social Sciences and Humanities	1	0	1	3	-	5	0	5	-
8 Islamic Studies	0	0	2	3	-	5	0	5	-
9 Human Environmental Cell	0	0	0	2	-	2	0	2	-
G. Div. of Education & Extension	2	6	5	10	0	23	5	18	8
1 Agricultural Education	1	3	0	0	-	4	1	3	2
2 Agricultural Extension	0	0	3	3	-	6	2	4	1
3 Short Courses	1	2	0	4	-	7	1	6	1
4 Rural Home Economics	0	1	2	3	-	6	1	5	4
H. Dir. of Crop Prod. & Water Management	-	-	-	-	13	13	0	13	0
I. Dir. of Advanced Studies	0	1	1	3	-	5	0	5	0
J. Dir. of Research	0	0	1	0	1	2	0	2	1
K. College of Vet. Sciences, Lahore	5	19	14	23	-	61	15	46	27
TOTAL	69	121	103	189	19	501	192	309	175

The vice-chancellor, deans, directors are not included in the figures of Ph.D.

CHAPTER 3 IMPLEMENTATION PLAN



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3-1 Implementation Plan

3-1-1 Implementation Concept

This project is aimed at procuring equipment for educational use for the University of Agriculture, Faisalabad in Pakistan with the grant aid assistance of the Government of Japan. The University of Agriculture, Faisalabad, which is the implementing organisation of this project, is to conclude an agreement for consulting services with a qualified Japanese consultant to have the latter prepare detailed design and specifications, prepare and distribute tender documents, accept and review the tenders, and supervise the equipment installation work. The project implementing organisation is also to conclude a contract with a qualified Japanese equipment supplier to have the latter procure and install the items of equipment and give instructions on their operation and maintenance to their personnel. The equipment installation work, from unpacking through installation, is to be carried out by the local workers under the direction of the Japanese experts dispatched to the project sites. The subsequent wiring, assembling, equipment test running and adjustment are to be carried out by the contractor's engineers in charge. These engineers are, for example, to be expert in general laboratory instruments, analytical instrument, optical instruments, general machines, instruments and apparatuses for livestock and veterinary use. The system for implementing this project is as illustrated in Fig. 3-1.

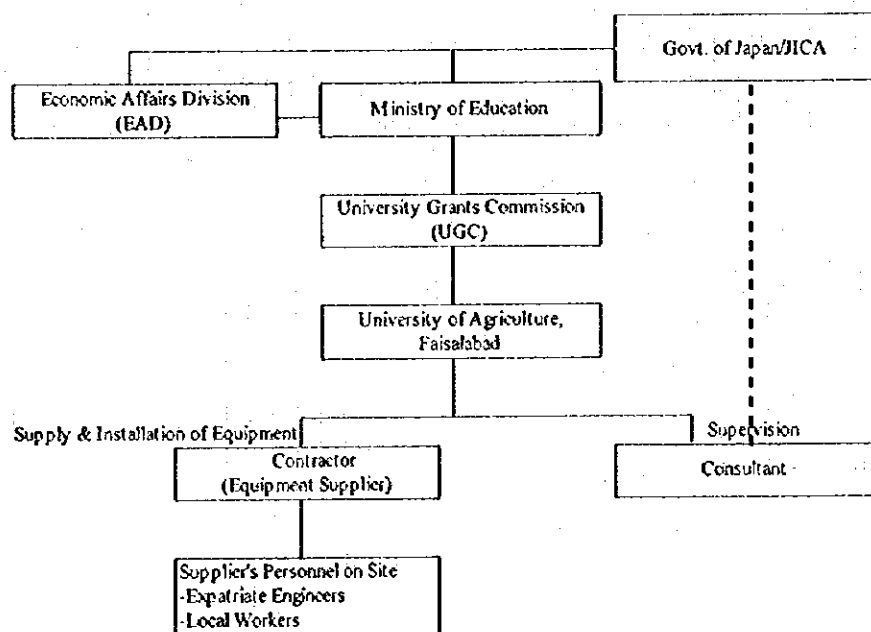


Fig. 3-1 Project Implementation System

3- 1-2 Implementation Conditions

At the University of Agriculture, Faisalabad, an academic year is divided into two semesters. The new semester (winter semester) begins in September, and the spring semester in February. During a semester, education and training are conducted for 19 weeks. Therefore, the schedules for the equipment installation work and the equipment test running and adjustment work should be worked out carefully in close consultation with the staff members in charge of the university so that these works may not adversely affect the education and research activities carried out at the university. At the university, working hours, as of 1996, are from 8:00 a.m. to 4:00 p.m., Fridays and Saturdays being holidays. In 1997, the period from early January to early February is Ramadan. In addition, there is the Eid-ur-Fitr holidays of about 3 days. During Ramadan, the local workers observe fasting from sunrise to sunset. This means that during Ramadan workers' productivity is likely decline. Due consideration should be given to this possibility in working out the schedule for the equipment installation work.

3- 1-3 Scope of Works

(1) Works to be undertaken by the Pakistan side, wherever necessary

- a) Civil work, interior work and foundation work wherever necessary to receive the equipment in laboratories
- b) Electrical wiring work to receive power supply necessary for operation of equipment in laboratories
- c) Electrical lighting work
- d) Telephone and communication facility works
- e) Procurement of utensils and furniture
- f) Procurement of chemicals, consumables, etc. for experiments

(2) Works to be undertaken by the Japanese side

- a) Procurement of equipment and spare parts, and transportation and installation works related thereto
- b) Electrical wiring from the equipment to the nearest plug socket
- c) Execution of test operation and adjustment , and instructions on operation and maintenance of equipment
- d) Consulting services including detailed design, preparation of tender documents, supervision of tendering and project implementation

3-1-4 Consultant Supervision

The consultant shall form a project team to prepare design documents and specifications and supervise the construction work so that this project may be completed as scheduled in accordance with Government of Japan's grant aid cooperation policy and the provisions of the consultant agreement, as well as with the objective of the basic design for this project. The consultant is to assign its experts to supervise the progress of the work and take charge of the items of equipment procured for such disciplines of study as agriculture, agricultural engineering and technology , basic sciences, animal husbandry, veterinary science, agricultural extension and education , and other common facilities as well as to take charge of estimation and preparation of tender documents. During the stage of supervision of the project, the consultant is to provide technical support to the Pakistan side in Japan at the time of the kick- off meeting and at the time of review and approval of the equipment manufacturing drawings, and are to attend factory and pre- shipment inspections as well as the places of equipment delivery and installation, wherever needed, on behalf of the Pakistan side so that the procurement and installation works may be executed properly. They are also to confirm the installation, acceptance and delivery of equipment.

3- 1- 5 Equipment Procurement Plan

(1) Method of Procurement

In principle, those items of equipment which require repair and maintenance services and supplies of replacement parts by manufacturers, such as electrical and electronic, and mechanical equipment, are to be procured from manufacturers who have their offices and maintenance agencies in Pakistan, regardless of whether they are made in Japan or third countries. Particularly, the following items of equipment shall better be procured in Pakistan.

1) Personal Computer System

Personal computers which are manufactured and marketed in Japan are not suited for use at the University of Agriculture, Faisalabad, because their standard keyboards and ROMs are for users who understand the Japanese language. It is desirable, therefore, to procure personal computer system through the local distributors in consideration of future upgrading in terms of RAM and hard disk capacities, although no personal computers are manufactured and marketed in the country. Furthermore, the software to be used in computers should be in Urdu version which is available only from the local suppliers.

2) Photocopy Machines and Copy Printers

Routine maintenance is very important for photocopy machines and copy printers. It is desirable, therefore, to procure these items through the local distributors so that these items may be maintained properly by them, although neither of them are manufactured in Pakistan. It should be noted that in the country there is demand for legal- size copies, as well as for A4 size ones. In this respect, too, it is advantageous to procure copiers and copy printers through the local distributors.

3) Combine Harvester

The combine harvester is to be used in the experimental farm with a large area of 300 ha. It is expected that they will be used very frequently. Since they will also be used for training in farm machine engineering, it is desirable to procure that which is suited for the country's natural environment. Two European and American manufacturers, both of whom are doing business in

the country are considering beginning the knockdown production of harvesters. If their plans are implemented before this project is started, these locally manufactured harvesters should be procured. If it is impossible to procure such harvesters, it is desirable to procure the one manufactured by an European or an American manufacturer who has satisfactory sales results through the local distributors.

When the above- mentioned items are procured in the country, 30- 45% import duties, provincial taxes (Octroi, etc.) and federal taxes are imposed on them (tax rates differ from one fiscal year to another). When an item on the local market is procured on the spot, it will be very difficult to have the taxes repaid. There is no viable way to do so. In the case of this project, the best way to be exempted from taxation is to obtain a certificate of tax exemption from the local tax office and take delivery of the item ordered in the bonded area. The implementing organisation on the Pakistan side shall take necessary measures for such tax exemptions whenever requested by the consultant or the contractor to the project.

In the case of some items of experimental equipment which are to be procured under this project, it will be desirable to procure those manufactured in third countries in light of their consistency with the similar existing items, the past experience of the academic staff using them, and the local distributors' service systems and delivery results. For example, it is desirable to procure the following items from manufacturers of third countries through the local distributors;

Plant growth cabinet, porometer, osmometer, ceptometer, plant efficiency analyser, plant water potential apparatus, meteorological observation equipment, Kjeldahl nitrogen analyser, thermostatic germinator, digital chloride meter, ammonia analyser, soxhlet extraction unit, calibration of pressure gauge apparatus, viscometer, fluid friction loss apparatus, water impact tester, vacuum filtration system, pollution monitoring station, water quality checker, fibrematic analyser, high volume instrument, offset printing machine, electronic vertical camera, etc.

(2) Method of Transportation

Marine transportation and land transportation in the country should be container transportation for shorter transportation time and protection of goods. Imported goods are to be unloaded from ships at Port of Karachi. But it is possible to go through customs formalities in Lahore, too. It seems desirable to clear customs in Lahore in order to minimise the time required to do so.

3-1-6 Implementation Schedule

The implementation schedule of this project is as shown in Fig. 3-2.

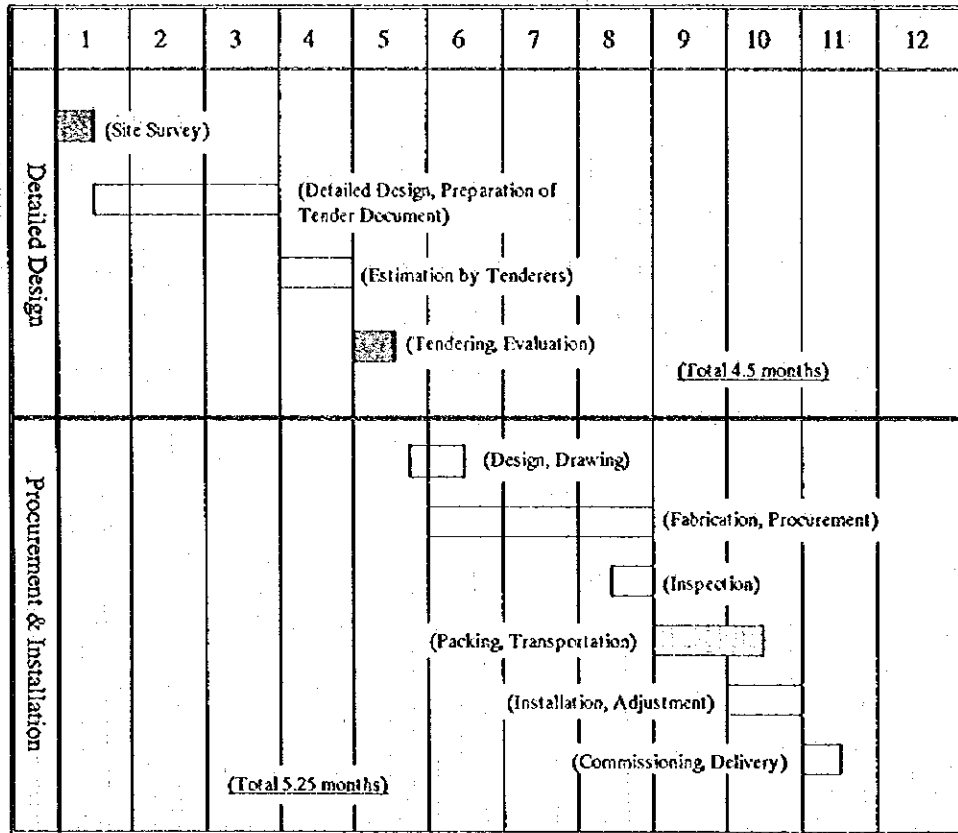


Fig. 3-2 Implementation Schedule

3-1-7 Obligations of Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

- a) To ensure prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,

- b) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- c) To bear commissions to an authorised Japanese foreign exchange bank for the banking services based upon the Banking Arrangement,
- d) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work,
- e) To maintain and use the equipment purchased under the Grant Aid properly and effectively,
- f) To take necessary measures to obtain permissions and sanctions needed for execution of the project,
- g) To secure the budget and to assign staff necessary for the operation and maintenance of the equipment procured under the Grant Aid,
- h) To bear all the expenses, other than those to be covered by the Grant Aid, which is necessary for execution of the project.

3-2 Project Cost Estimation

The Government of Pakistan shall bear the cost of 17.26 million rupees necessary for execution of the project. The breakdown of the cost is as follows;

Item	Rs.(Million)
Interior Works of Labs.	4.665
Remodelling of Central Lab.	2.000
Electrical Wiring/Lighting Work	3.076
Wages of Workers	0.180
Procurement of Fixture & Furnishings	2.033
Procurement of Chemicals	0.280
Bank Commission	4.500
Miscellaneous	0.534

3-3 Operation and Maintenance

The method of routine operation of experimental equipment varies with the department concerned and the type of equipment. Generally, the experimental equipment is operated either by the academic staff (professors, associate professors, assistant professors and lecturers) or by the technical staff (laboratory technicians, laboratory assistants and junior laboratory assistants with 10-30 years of experience). Some of the easy-to-handle items of equipment are operated by the students taking doctoral courses and master's courses, and basic items, such as microscopes, by the students taking undergraduate courses. Generally, the designated academic staff takes charge of routine equipment maintenance. At some departments, the technical staff is in charge of the task. Repair works of laboratory equipment is conducted by the university's Repair Cell.

Table 3-1 University Sections in Charge of Maintenance

Section	Scope of Work	No. of Staff
Repair Cell	To maintain and repair the laboratory equipment and other educational equipment	19
Auto and Farm Machinery Repair Shop	To maintain and repair the agricultural machinery and equipment of the Faculty of Agricultural Engineering & Technology	13
Engineering & Construction Dept.	To undertake construction and maintenance of buildings and other related works including power supply, water supply, gas supply, etc.	101

In principle, the items of equipment procured under this project are to be maintained and managed making full use of the organisation and personnel of the Repair Cell. However, part of these items should be maintained and managed utilising the Auto and Farm Machinery Repair Shop,

and the cooperation of the Engineering and Construction Department will be indispensable for the equipment installation work.

The costs of equipment maintenance and management vary with the condition of equipment operation. It is estimated, however, that the annual costs of maintenance and management of the items of equipment procured under this project, including the cost of consumables, will be about 3 million rupees. The period of depreciation for these items are 7 to 10 years. It is possible to continue to use them beyond this, but their performance cannot be guaranteed beyond these time limits.

The university estimates its annual budget for fiscal 1996- 97 at about 240 million rupees, of which about 5.7 million rupees will be for equipment repair and maintenance, and 6.4 million rupees for equipment procurement. In addition to this, the university has requested the Ministry of Education to appropriate 3 million rupees especially for the maintenance and management of the items of equipment to be procured under this project. It is very likely that the request for the additional budgetary appropriations will be approved, and therefore there will be no problem with the budgetary aspect of this project.

The University of Agriculture, Faisalabad, is an educational institution, and as such, the university is operated mainly with the federal government's subsidies. Its own incomes include incomes from tuition fees, but they represents only a fraction of the university's total budget. The fact is that the university has no choice but to be dependent on the federal government's subsidies.

Table 3-2 Fees due to Students

Fee	Amount (Rs./Head)
Tuition Fee (B.Sc.,D.V.M.)	144 /Semester
Tuition Fee (M.Sc.,M.Phil.)	231 /Semester
Tuition Fee (Ph.D.)	197 /Semester
Admission Fee	116
Registration Fee	116
Examination Fee	58 /Semester
Thesis Fee (M.Sc.,M.Phil.)	150
Thesis Fee (Ph.D.)	500
Other Miscellaneous Fees	

**CHAPTER 4 PROJECT EVALUATION AND
RECOMMENDATION**

CHAPTER 4 PROJECT EVALUATION AND RECOMMENDATIONS

4-1 Project Effect

(1) Consistency with the National Development Plan

The Government of Pakistan's 8th five year plan (1993- 98) focuses on the technology- supported development of agriculture, which is central to the economy of the country, with the aim of rectifying regional differences in economic development and creating job opportunities in line with the objectives of the past five- year national development plans. In a move to supplement this effort, the Government of Pakistan has come out with the following objectives concerning agricultural education, research and extension, which are to be attained in the course of the ongoing five- year national development plan.

- Higher priority of development will be given to better linkages between the systems of research, education, extension and production in disseminating the latest agricultural technology.
- Quality of agricultural higher education at college and university level should be improved through improvement of curriculum structure by placing emphasis on local conditions and field and laboratory based training.
- The existing agricultural education institutions, including UAF, will be required to improve the quality of education by giving emphasis on both the theoretical and practical aspects of agriculture in order to meet the national requirement of technical manpower for the agricultural sector.
- Emphasis will be laid on site- specific, problem oriented and productivity increasing research, and clear demarcation of research field by federal and provincial research institutions will be established so that each of them will work effectively and the results of researches will be transmitted to farmers in need.
- Emphasis will be placed on the extensive use of audio- visual media for extension of appropriate agricultural technology to the small scale farmers

These objectives evidence the prominent position of this project in the Government of Pakistan's national development plan.

(2) Improving the Students' Abilities and Techniques

Most of the existing items of equipment of the University of Agriculture, Faisalabad, were installed more than 10 years ago (some of them were installed more than 30 years ago) and therefore have become superannuated. Moreover, most of them were supplied in very limited quantities. Teaching materials used in practical training, such as textbooks and reference books, are those used by the academic staff himself when he studied in Europe or the United States or are prepared by him based on his own knowledge acquired through latest journals and other publications. In view of the fact that in recent years, themes related to high technologies, including biotechnology, have been adopted in increasing numbers at institutions of higher agricultural education in various parts of the world to cope with such global issues as population explosion and food shortages, the university is forced to incorporate subjects dealing with these latest technologies and knowledge into its curricula. The fact is, however, that at the university experiments are conducted using outdated instruments and apparatuses and that because of a basic equipment shortage, most of the experiments are demonstrations by the academic staff. As a result, the students sometimes fail to go beyond understanding the basic concepts of the experiments they conduct. A lack of empirical elements in agricultural education has very adversely affected the educational activities carried out at the university, making it difficult for the university to be in line with the objectives of the federal government's national development policy, which focuses on practical, problem solving type agricultural education. If the university's equipment is improved through the implementation of this project, it will help the university's students make empirical and scientific approaches to problems closely related to agriculture and raise the level of their skills and knowledge of agriculture. After graduating from the university, they will be able to carry out practical extension, education and research activities at their respective workplaces.

Every year about 770 fresh students are enrolled at the University of Agriculture, Faisalabad, of which 95 percent take postgraduate courses after finishing undergraduate courses. Every year about 700 graduates of the university become working members of society. If its equipment is improved through this project, it is expected that there will be a considerable increase in the number of applicants for admission to the university, making it necessary for the university to consider increasing its full quota. Its students will graduate acquiring practical skills and knowledge of agriculture by making their empirical and scientific approaches to agricultural problems fully utilising the equipment provided under this project, which will contribute to the enhancement of the technical

level of the country's experts in agriculture. Many of the graduates of the university are working at research and training institutions of government agencies, federal and state, institutions of education, and federal and state government agencies. These organisations are carrying out activities related directly and indirectly to the lives of farmers and other residents of rural areas. Rural areas account for 71.7 percent of the country's total population and 40.6 of the same live in the Punjab. In light of these facts, it is expected that the graduates of the University of Agriculture, Faisalabad, will produce tremendous positive effects, direct and indirect, even in the Punjab alone.

(3) The Project's Possible Contributions to the Agricultural Sector and the Related Sectors

Although an agricultural country, Pakistan imports wheat (a little more than 10 percent of its total consumption) and edible oil (a little less than 80 percent of its total consumption). As a result of a considerable increase in the people's purchasing power, which is attributable to the growth of the country's economy, demand for meat and dairy products is on the rise. This has led to an urgent need to increase the production of livestock products. Under such circumstances, the National Commission on Agriculture worked out measures to promote research, development and introduction of breeds and species which are highly resistant to unseasonable weather and harmful insects, as well as high yield breeds and species, to rationalise cultivation through the introduction of mechanised farming and to secure the steady supply of water for agricultural use through the expansion and improvement of the existing irrigation facilities. If these measures are to be effective, it is necessary that agricultural research institutions, institutions of higher agricultural education and related government agencies take a problem solving type approach to them in close collaboration with each other. It is also necessary to nurture high quality human resources to engage in such activities.

The departments of the University of Agriculture, Faisalabad, for which this project is going to be implemented, cover a very wide range of disciplines, namely, all sub-sectors of agriculture, forestry, livestock and fisheries. Graduates of the university are working both at public organisations (government agencies, research institutions and educational institutions) and at private enterprises and are making the following contributions to these sub-sectors.

- Breeding and improvement of the quality of farm, forest, marine and livestock products, as well as of the methods of their production
- More efficient land use and improvement of soil quality
- Improvement of the quality of agricultural inputs, such as fertilisers, chemicals, farm machines, etc.

- Development, and improvement of the quality of, processed farm products
- Improvement of the methods of agricultural extension

These measures are expected to result in a nationwide increase in agricultural productivity if they are implemented through the concerted efforts of the above- mentioned organisations.

(4) Expansion of the Scope of Agricultural Extension through Refreshers Courses

The Division of Agricultural Education and Extension conducts about 90 short courses in total to train researchers, engineers and government employees who are active in the agricultural sector and related sectors every year in association with the departments of the University of Agriculture, Faisalabad. In view of the fact that while the personnel and spaces required for these short courses are sufficient, there is a shortage of instruments and apparatus for use in these courses, the university is finding it impossible to increase the number of courses further. If the necessary quantities of instruments and apparatuses are procured under this project, it will become possible to promote the spread of new agricultural technologies and knowledge to the extent that the university's educational and research activities are not affected badly by such effort, which in turn will make it possible for those who have finished these courses to educate and train farmers at training facilities in their communities. Most of the Pakistani farmers are operating on a relatively small scale, heavily dependent on family labour, which, coupled with small cash incomes, has lead to a very low rate of literacy (27.5 percent) in rural areas, whereas the rate of literacy in urban areas is 57 percent. Most of the females living in rural areas (who represent 34.4 percent of the country's population) are engaged in housework. They have few opportunities to enter school. The low level of knowledge and skills of farmers and other residents of farm village is a major hindrance to agricultural development in the country. If individual farmers' productivity is improved through agricultural extension activities, which is one of the benefits expected from this project, the standard of social life in rural areas can be raised.

Although not profitable in nature, this project is expected to produce the above- mentioned direct and indirect benefits. In addition, it is unlikely that this project will harm the environment. For these reasons, it is appropriate to implement this project under the Government of Japan's grant aid cooperation.

4-2 Recommendations

As mentioned above, there are many benefits expected from this project. It is certain that this project will meet the basic human needs (BHN) of the people of the country. It is appropriate, therefore, to implement this project under the Government of Japan's grant aid cooperation. There is no problem with the Pakistan side's system for the implementation and management of this project, in terms of personnel and budgetary appropriations. If the following problems are resolved, however, the project will be implemented more smoothly and more effectively.

(1) Training in Equipment Operation and Maintenance Techniques

The University of Agriculture, Faisalabad, has teaching and technical staffs large enough to conduct routine equipment operation, maintenance and management properly. Many of its instructors have taken their degrees from universities in Europe and the United States. Some of them have experience of engaging in research on agricultural technology. It can be said that the level of these staff members' knowledge and skills are high. Since the items of equipment to be procured under this project include those into which new technologies to be introduced in the university for the first time are incorporated, however, it is desirable that sufficient guidance on the methods of operation, maintenance and management of such items be provided to the university's staff members in charge on the project sites after the work to install them has been completed and that these staff members be trained for a short time at the facilities of the equipment manufacturers.

(2) Adequate Budgetary Appropriations for Equipment Maintenance and Management

Thus far, the cost of equipment maintenance and management has accounted for 2.5 percent of the ordinary budget at the University of Agriculture, Faisalabad. The university submitted a written request (PC- 1) concerning the local cost (cost of repair of buildings and equipment and procurement of furniture, etc.) of 17 million rupees per annum, which the implementation of this project will necessitate, and the Executive Committee of the National Economic Council (ECNEC) has already approved the request. The cost of operation of the existing items of equipment plus that of operation of the items of equipment to be procured under this project will not make the cost of equipment maintenance and management a heavy financial burden on the university. As whether or not the items of equipment procured under this project will be used as effectively as planned will depend on whether or not the budget for equipment maintenance and management is executed properly, however, it will be necessary to monitor the execution of the budget. It will also be

necessary to urge the Ministry of Education and the UGC to ensure that the budget is executed properly on an as needed basis.

(3) Dispatch of Experts and Personnel Exchanges for Educational Purposes

In relation to the item (1) above, if short- term Japanese experts are dispatched to the project sites to provide guidance on operation of equipment, particularly those in the central laboratory, and conduct research jointly with their Pakistani counterparts under specific themes so that the items of equipment procured under this project may be used effectively, it will make this project more effective.

The University of Agriculture, Faisalabad, is conducting personnel exchange for educational purposes and joint research with foreign universities and research institutions. These activities are carried out for specific departments under specific themes. It will be important to promote such international exchange programme under common educational and research themes in order to raise the technical level of its educational and research activities.

APPENDICES

Appendix I MEMBER LIST OF THE STUDY TEAM

Mr. Toru TAKE	Team Leader	Planning Department JICA
Dr. Miyoji SUGIURA	Technical Adviser	Prof., Faculty of Agriculture, and Director, Institute of Tropical Agriculture, Kyushu University
Mr. Wataru SHIGA	Chief Consultant (Agricultural Education Planner)	UNICO International Corporation
Dr. Takayoshi INO	Equipment Planner	UNICO International Corporation
Dr. Yasuo SHIBATA	Cost Estimator	UNICO International Corporation

Appendix 2 SURVEY SCHEDULE

NO.	Date	Day	Itinerary	City
1	95/12/01	Fri	Lv. Tokyo - Ar. Islamabad	Islamabad
2	95/12/02	Sat	Visit to Allama Iqbal Open University Internal Meeting	Islamabad
3	95/12/03	Sun	Courtesy calls to JICA, Embassy of Japan (EOJ), Ministry of Education (MOE), Economic Affairs Division (EAD) Lv. Islamabad - Ar. Faisalabad	Faisalabad
4	95/12/04	Mon	Courtesy Call to University of Agriculture, Faisalabad (UAF)	Faisalabad
5	95/12/05	Tue	Meeting with UAF	Faisalabad
6	95/12/06	Wed	Meeting with UAF	Faisalabad
7	95/12/07	Thu	Signing of the Minutes of Discussions	Faisalabad
8	95/12/08	Fri	Visit to Joint Satiana Project Site Internal Meeting and Data Arrangement	Faisalabad
9	95/12/09	Sat	(Mr. Take, Prof. Sugura) Lv. Faisalabad - Ar. Islamabad (Consultants) Meeting with UAF	Islamabad Faisalabad
10	95/12/10	Sun	(Mr. Take, Prof. Sugura) Report to JICA, EOJ, MOE, EAD (Consultants) Meeting with UAF	Islamabad Faisalabad
11	95/12/11	Mon	(Mr. Take, Prof. Sugura) Lv. Islamabad for Japan (Consultants) Meeting with UAF	Home-bound Faisalabad
12	95/12/12	Tue	Meeting with UAF	Faisalabad
13	95/12/13	Wed	Meeting with UAF	Faisalabad
14	95/12/14	Thu	Meeting with UAF	Faisalabad
15	95/12/15	Fri	Internal Meeting and Data Arrangement	Faisalabad
16	95/12/16	Sat	Meeting with UAF	Faisalabad
17	95/12/17	Sun	Meeting with UAF	Faisalabad
18	95/12/18	Mon	Meeting with UAF	Faisalabad
19	95/12/19	Tue	Lv. Faisalabad - Ar. Lahore, Meeting with the College of Veterinary Sciences, Lahore (CVSL)	Lahore
20	95/12/20	Wed	Meeting with CSVL	Lahore
21	95/12/21	Thu	Meeting with CSVI, Lv. Lahore - Ar. Faisalabd	Faisalabad
22	95/12/22	Fri	Internal Meeting and Data Arrangement	Faisalabad
23	95/12/23	Sat	Meeting with UAF	Faisalabad
24	95/12/24	Sun	Meeting with UAF	Faisalabad
25	95/12/25	Mon	Internal Meeting and Data Arrangement	Faisalabad
26	95/12/26	Tue	Meeting with UAF	Islamabad
27	95/12/27	Wed	Lv. Faisalabad - Ar. Islamabad Report to JICA, EOJ, MOE, EAD	Islamabad
28	95/12/28	Thu	Lv. Islamabad - Ar. Lahore - Lv. Lahore	On Flight
29	95/12/29	Fri	- Ar. Bangkok	Bangkok
30	95/12/30	Sat	Lv. Bangkok - Ar. Tokyo	

Appendix 3 LIST OF PARTY CONCERNED IN THE RECIPIENT COUNTRY

Economic Affairs Division (EAD)

Mr. Shahid Humayun	Deputy Secretary
Mr. Nabeer Ahmad Goheer	Section Officer (Japan-I)

Ministry of Education (MOE)

Dr. Abdul Aziz Khan	Joint Educational Adviser (P & D)
Mr. Bashir Ahmad Chaudhry	Assistant Educational Adviser

University Grants Commission (UGC)

Dr. S. M. Hassan	Director
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Allama Iqbal Open University (AIOU)

Mr. Amar Jaleel Kazi	Director, Institute of Educational Technology
Mr. Mehmood Ali	Chief Engineer, Institute of Educational Technology

University of Agriculture, Faisalabad (UAF)

Dr. Mohammad Anwar-ul-Haq	Vice-Chancellor
Sh. Muhammad Akram	Registrar/Project Director
Mr. A.M. Iqbal	Deputy Registrar
Dr. Riaz Hussain Qureshi	Prof., Chairman, Dept. of Soil Science
Dr. Khalid Mahmood Khan	Prof., Director Research cum Chairman, Dept. of Chemistry/Biochemistry
Dr. Muhammad Nawaz	Prof., Chairman, Dept. of Veterinary Physiology & Pharmacology
Dr. Khurshid Alam	Dean, Faculty of Agriculture
Dr. Fateh Muhammad Chaudhry	Prof., Chairman, Dept. of Agronomy
Dr. Shamshad Hussain Shah	Prof., Dept. of Agronomy
Dr. Muhammad Saeed	Assoc. Prof., Dept. of Agronomy
Dr. Nazir Ahmad	Prof., Dept. of Crop Physiology
Dr. Tariq Mahmood	Lecturer, Dept. of Crop Physiology
Mr. Shahzad Basra	Lecturer, Dept. of Crop Physiology
Dr. Syed Sadaqat Mehdi	Assoc. Prof., Dept. of Plant Breeding & Genetics
Dr. Rana M. Aslam Khan	Prof., Chairman, Dept. of Horticulture

Dr. Iqrar Ahmad Khan	Prof., Dept. of Horticulture
Dr. Muhammad Amjad Aulakh	Assist. Prof., Dept. of Horticulture
Dr. Maqsood Ahmad Gill	Assoc. Prof., Dept. of Soil Science
Dr. Manzoor Qadir	Lecturer, Dept. of Soil Science
Dr. M. Akhtar	Prof., Chairman, Dept. of Agricultural Entomology
Dr. Anjum Suhail	Assist. Prof., Dept. of Agricultural Entomology
Dr. Masood A. A. Qureshi	Prof., Chairman, Dept. of Forestry, Range Management & Wild Life
Dr. Ghulam Sarwar Khan	Assoc. Prof., Dept. of Forestry, Range Management & Wild Life
Mr. Akram Zia	Assist. Prof., Dept. of Forestry, Range Management & Wild Life
Mr. Amer Hussain Shah	Lecturer, Dept. of Forestry, Range Management & Wild Life
Dr. Mohammad Bashir Ilyas	Prof., Chairman, Dept. of Plant Pathology
Dr. Jaffar Husain Mirza	Prof., Dept. of Plant Pathology
Dr. M. Aslam Khan	Lecturer, Dept. of Plant Pathology
Mr. Abdus Shakoor Shakir	Lecturer, Dept. of Plant Pathology
Dr. A.D. Chaudhry	Dean, Faculty of Agri. Engineering & Technology
Dr. Anjad Ali	Prof. Chairman, Dept. of Food Technology
Dr. Faqir M. Anjum Chaudhry	Assoc. Prof., Dept. of Food Technology
Mr. Arshad Ali	Assoc. Prof., Chairman, Dept. of Irrigation & Drainage
Dr. Muhammad Iqbal	Assist. Prof., Dept. of Irrigation & Drainage
Dr. Niaz Ahmed	Assist. Prof., Dept. of Irrigation & Drainage
Mr. Nisar Ahmed Jamil	Assoc. Prof., Chairman, Dept. of Fibre Technology
Mr. Shaikh Muhammad Nawaz	Assoc. Prof., Dept. of Fibre Technology
Dr. Mushtaq Ahmed	Subject Expert, Prof., Dept. of Fibre Technology
Dr. Jehangir Khan Sial	Prof., Chairman, Dept. of Basic Engineering
Mr. Mohammad Asghar Rana	Assoc. Prof., Dept. of Basic Engineering
Mr. Ahmad Shafi	Assist. Prof., Dept. of Basic Engineering
Dr. Muhammad Shafi Sabir	Prof., Chairman, Dept. of Farm Machinery & Power
Mr. Muhammad Azam Khan	Lecturer, Dept. of Farm Machinery & Power
Dr. Altaf-ur-Rehman Rao	Prof., Dean, Faculty of Sciences
Dr. Riaz Ahmad	Prof., Dept. of Chemistry & Biochemistry

Dr. Rakhshanda Nawaz	Prof., Dept. of Chemistry & Biochemistry
Dr. Munir Ahmad Shikh	Assoc. Prof., Dept. of Chemistry & Biochemistry
Dr. Zahida Parveen	Assist. Prof., Dept. of Chemistry & Biochemistry
Dr. Muhammad Zubair	Lecturer, Dept. of Chemistry & Biochemistry
Dr. Ejaz Rasul	Prof., Chairman, Dept. of Botany
Mr. Farukh Javed	Lecturer, Dept. of Botany
Mr. Riaz Ahmad Khan	Prof., Chairman, Dept. of Physics
Dr. Muhammad Anwar Ch.	Assoc. Prof., Dept. of Physics
Sh. Abdul-Latif	Assoc. Prof., Chairman, Dept. of Mathematics & Statistics
Dr. Mirza Azhar Beg	Prof., Chairman, Dept. of Zoology & Fisheries
Dr. Muhammad Javed	Assist. Prof., Dept. of Zoology & Fisheries
Dr. Shahnawaz Akhtar Rana	Assist. Prof., Dept. of Zoology & Fisheries
Dr. Shakila Khalid	Assist. Prof., Dept. of Zoology & Fisheries
Dr. Abrar Hussain Gilani	Prof., Dean., Faculty of Animal Husbandry
Dr. Munawar A. Sial	Prof., Chairman, Dept. of Animal Nutrition
Dr. Abu Saeed Hashmi	Assoc. Prof., Dept. of Animal Nutrition
Dr. Raza Ali Gill	Prof., Chairman, Dept. of Livestock Management
Dr. Muhammad Abdullah	Assist. Prof., Dept. of Livestock Management
Syed Hassan Raza	Lecturer, Dept. of Livestock Management
Dr. Nazir Ahmad	Prof., Chairman, Dept. of Poultry Husbandry
Dr. Hasnat Ahmed	Assoc. Prof., Dept. of Poultry Husbandry
Dr. Tassarwar Hussain Shah	Assoc. Prof., Dept. of Poultry Husbandry
Dr. Sultan Mahmood	Assist. Prof., Dept. of Poultry Husbandry
Mr. Muhammad Tahir	Assoc. Prof., Dept. of Animal Breeding & Genetics
Dr. Muhammad Aftab Khan	Assoc. Prof., Dept. of Animal Breeding & Genetics
Dr. Muhammad Sajjad Khan	Assist. Prof., Dept. of Animal Breeding & Genetics
Dr. Shaukat Ali Chaudhry	Prof., Dean, Faculty of Veterinary Science
Dr. Sikandar Hayat	Prof., Chairman, Dept. of Veterinary Parasitology
Dr. M. Naseem Chaudhry	Prof., Chairman, Dept. of Veterinary Anatomy

Dr. Javed Iqbal	Lecturer, Dept. of Veterinary Anatomy
Dr. M. Zaman Khan	Prof., Chairman, Dept. of Veterinary Pathology
Dr. Ahrar Khan	Assist. Prof., Dept. of Veterinary Pathology
Dr. Zarghani Khan	Assist. Prof., Dept. of Veterinary Pathology
Dr. Sikandar Hayat	Prof., Chairman, Dept. of Veterinary Parasitology
Dr. Zafar Iqbal	Assist. Prof., Dept. of Veterinary Parasitology
Dr. Nisar Ahmed Khan	Lecturer, Dept. of Veterinary Parasitology
Mr. Nusrat Iqbal Chaudhry	Prof., Chairman, Dept. of Clinical Medicine & Surgery
Dr. Tariq Aziz	Prof., Dept. of Clinical Medicine & Surgery
Dr. Khalid Amin	Assoc. Prof., Dept. of Clinical Medicine & Surgery
Dr. Ghulam Muhammad	Assist. Prof., Dept. of Clinical Medicine & Surgery
Dr. Mumtaz A. Khan	Assist. Prof., Dept. of Clinical Medicine & Surgery
Dr. Ala-ud-Din Khan	Prof., Chairman, Dept. of Animal Reproduction
Dr. Hafiz Abdus Samad	Assoc. Prof., Dept. of Animal Reproduction
Dr. Laeeq A. Lodhi	Assoc. Prof., Dept. of Animal Reproduction
Dr. Muhammad Shoaib Akhtar	Prof., Chairman, Dept. of Veterinary Physiology & Pharmacology
Dr. Zia-ur-Rahman	Assoc. Prof., Dept. of Veterinary Physiology & Pharmacology
Dr. Rana Faqir Hussain	Assist. Prof., Dept. of Veterinary Physiology & Pharmacology
Dr. Tanveer Khaliq	Assist. Prof., Dept. of Veterinary Physiology & Pharmacology
Dr. Ijaz Hussain	Assist. Prof., Dept. of Veterinary Physiology & Pharmacology
Dr. Muhammad Zubair Saddiqui	Prof., Director, Agricultural Education & Extension
Dr. Kausar Almas	Assoc. Prof., Chairperson, Dept. of Rural Home Economics
Ms. Nahced Abbas	Assist. Prof., Dept. of Rural Home Economics
Dr. Tanvir Ali	Assist. Prof., Dept. of Agri. Extension
Mr. Najf Ali Khan	Head, Dept. of Library
Mr. Muneer Ahmad Shaikh	Assist. Registrar (Printing)
Mr. Muneer Ahmad Sheikh	Assist. Registrar (Press)

Mr. Abdul Sattar	Assist. Registrar (P & D)
Dr. Wasim Mushtaq	Dental Surgeon
Dr. Jamil Asghar	Senior Medical Officer
Dr. Abdul Hafeez	Senior Medical Officer
Engr. Mohammad Sohail	Executive Engineer
Mr. Mian Maqsood Ahmad	Assist. Executive Engineer
Dr. Muhammad Shafi Sabir	Principal Officer, Engineering & Construction Dept.
Khawaja Altaf Husain	Co-Principal Officer, Engineering & Construction Dept.

College of Veterinary Sciences, Lahore (CVSL)

Dr. Rashid Ahmad Chaudhry	Prof., Principal
Dr. Mohammad Aslam Bhatti	Prof., Acting Principal, Head of Animal Husbandry Section
Dr. Saghir Ahmad Jafri	Prof., Head of Physiology Section
Dr. Nisar Ahmed Mian	Prof., Officer in Charge
Dr. Talat Naseer Pasha	Assist. Prof.
Mr. Shahid Abbas	Lecturer, Physiology Section
Dr. Masood Rabbani	Lecturer, Physiology Section
Mr. Anjum Khaliq	Lecturer
Mr. Attique Ahmad Sheikh	Deputy Registrar
Mr. Ghulam Mustafa	Sub-Engineer
Mr. A.R. Rizvi	Prof., Officer in Charge, Microbiology Section
Dr. M. Akrami Muneer	Assoc. Prof., Microbiology Section
Dr. M. Naeem	Assoc. Prof., Microbiology Section
Dr. S. M. Amin	Assoc. Prof., Microbiology Section
Dr. Khushi Muhammad	Assist. Prof., Microbiology Section
Mr. M. Iqbal	Lecturer, Microbiology Section
Dr. Shakil Akhtar Khan	Assist. Prof., Officer in Charge, Pathology Section
Dr. Asimi Aslam	Lecturer, Pathology Section
Dr. Ahmad Raja	Lecturer, Pathology Section
Dr. H.A. Hashmi	Assoc. Prof., Parasitology Section
Mr. Mubashar Saeed	Assoc. Prof., Parasitology Section
Mr. Assif Rabbani	Assoc. Prof., Parasitology Section
Mr. Muhammad Afzal	Assoc. Prof., Parasitology Section
Dr. Muhammad Arshad Qureshi	Assoc. Prof., Pharmacology Section
Dr. Muhammad Sabir	Assoc. Prof., Pharmacology Section

Dr. Imtiaz Hussain Khan	Assoc. Prof., Pharmacology Section
Dr. M. Nawaz Asghar	Assoc. Prof., Pharmacology Section
Dr. Khalid Parvez	Assoc. Prof., Pharmacology Section
Dr. Madhar Iqbal	Assoc. Prof., Pharmacology Section

Pakistan Agricultural Research Council (PARC)

Dr. Zahid Hussain	Director, Land & Water Resources (Natural Resources Div.)
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Department of Agriculture, Western Australia

Dr. Ed Barrett-Lennard	Senior Research Officer/Subprogram Manager, Perennial Pastures and Shrubs
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Embassy of Japan

Mr. Takao Kawakami	Ambassador Extraordinary and Plenipotentiary
Mr. Mitsuyosi Nakata	First Secretary

JICA Pakistan Office

Mr. Noriaki Nishimiya	Deputy Resident Representative
Mr. Mahmood A. Jilani	Chief Programme Officer

APPENDIX 4 Minutes of Discussion

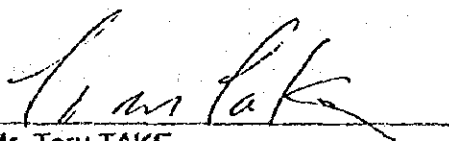
**Minutes of Discussions
on
the Basic Design Study
on
the Project for Improvement of Educational Equipment
for the University of Agriculture, Faisalabad
in
the Islamic Republic of Pakistan**

In response to a request made by the Government of the Islamic Republic of Pakistan, the Government of Japan has decided to conduct a Basic Design Study on the Project for Improvement of Educational Equipment for the University of Agriculture, Faisalabad in the Islamic Republic of Pakistan (hereinafter referred to as "the Project"), and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Islamic Republic of Pakistan a Basic Design Study Team headed by Mr. Toru TAKE, Planning Department, which is scheduled to stay in the country from 1st December to 28th December, 1995.

The Team had a series of discussions with the authorities concerned of the Government of the Islamic Republic of Pakistan and conducted a field survey at the study area.

As a result of the discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study report of the Project based on the items.

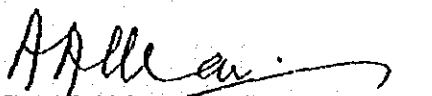
Faisalabad, 7th December 1995



Mr. Toru TAKE
Leader, Basic Design Study Team,
JICA



Prof. Dr. Mohammad Anwar-ul-Haq
Vice Chancellor,
University of Agriculture, Faisalabad



Dr. Abdul Aziz Khan
Joint Educational Adviser,
Ministry of Education,
Pakistan

Mr. Shahid Humayun
Deputy Secretary,
Economic Affairs Division,
Pakistan

ATTACHMENT

1. OBJECTIVE OF THE PROJECT

The objective of the Project is to strengthen the educational activities of the University of Agriculture, Faisalabad through the upgrading of essential educational equipment.

2. PROJECT SITE

University of Agriculture, Faisalabad and its affiliated College of Veterinary Sciences, Lahore

3. EXECUTING AGENCY

The Ministry of Education is an overall responsible agency for the Project and the University of Agriculture, Faisalabad is an executing agency of the Project.

4. ITEMS REQUESTED BY THE GOVERNMENT OF THE ISLAMIC REPUBLIC OF PAKISTAN

l. After the discussions with the Basic Design Study Team, equipment for the faculties/departments etc. described in Annex-I which would be necessary for education in the University of Agriculture, Faisalabad including its affiliated College of Veterinary Sciences, Lahore was finally requested by the Pakistan side.

B. Both sides have agreed, however, that the final components of the Project will be decided by the Basic Design Study Team after further studies in Japan on the basis of the scope of the Project under the Japan's Grant Aid.

5. COMMENTS BY THE JAPANESE SIDE ON THE ITEMS REQUESTED

AWB The equipment to be given higher priority in the Project are:

- 1) the equipment to be replaced with the existing equipment which has already been deteriorated, outdated or obsolete.
- 2) the equipment to be added to the existing one that are in short of quantity in consideration of laboratory experiments or lectures.
- 3) the essential equipment indispensable for teaching under curricula or syllabi.

While, the equipment to be given low priority in the Project are:

- 1) the most advanced equipment solely used for research work,
- 2) the equipment with some difficulties on installation/infrastructure conditions,
- 3) the expensive equipment less utilized because of infrequent experiments, and
- 4) the equipment with financial/marketing difficulties on the procurement of consumable and spare parts etc.

6. JAPAN'S GRANT AID PROGRAMME

- (1) The Government of the Islamic Republic of Pakistan have understood the system of the Japan's Grant Aid Programme explained by the Team . (see Annex-II.)
- (2) The Government of the Islamic Republic of Pakistan and the University of Agriculture, Faisalabad will take necessary measures described in Annex-III for smooth implementation of the Project on condition that the Grant Aid by the Government of Japan is extended to the Project.

7. SCHEDULE OF THE STUDY

- (1) The Consultants will proceed to further studies in Pakistan until 28th of December, 1995.
- (2) JICA will complete the Basic Design Study report and send it to the Government of the Islamic Republic of Pakistan by the end of April 1996.

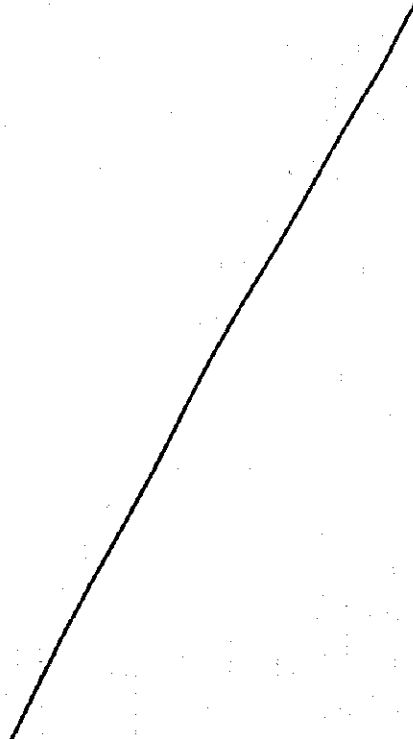
8. REPLY TO THE QUESTIONNAIRE

The Pakistan side will submit the answers to the questionnaire to the Study Team one by one as soon as possible but not later than 26th December, 1995.

9. MONITORING

The Ministry of Education of the Islamic Republic of Pakistan and the University of Agriculture, Faisalabad have the responsibility of monitoring progress of the Project and reporting it to the Embassy of Japan and JICA Pakistan Office annually through Economic Affairs Division, provided that the Japan's Grant Aid is extended to the Project.

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LIST OF DEPARTMENTS REQUESTING EQUIPMENT

Faculty/Department which requests Equipment	
A. Agriculture	
	1 Crop Physiology
	2 Horticulture
	3 Agronomy
	4 Forestry, Range Management & Wildlife
	5 Plant Pathology
	6 Plant Breeding & Genetics
	7 Soil Science
	8 Agricultural Entomology
B. Agri. Engineering & Technology	
	9 Food Technology
	10 Irrigation & Drainage
	11 Fibre Technology
	12 Basic Engineering
	13 Farm Machinery & Power
C. Basic Science	
	14 Botany
	15 Zoology & Fisheries
	16 Physics
	17 Chemistry/Biochemistry
D. Animal Husbandry	
	18 Office of the Dean
	19 Livestock Management
	20 Animal Breeding & Genetics
	21 Animal Nutrition
	22 Poultry Husbandry
E. Veterinary Science	
	23 Veterinary Anatomy
	24 Veterinary Pathology
	25 Veterinary Parasitology
	26 Clinical Medicine & Surgery
	27 Animal Production
	28 Physiology & Pharmacology
	29 Veterinary Microbiology
F. College of Vet. Sciences, Lahore	
	30 Various Dept.
G. Dir. of Agri. Education & Extension	
	31 Education & Extension
H. General Facilities	
	32 Audio/Video Equipment
	33 Central Laboratory
	34 University Press

B

A.H.

l.l.

Japan's Grant Aid Scheme

1. Grant Aid Procedures

- 1) Japans Grant Aid Program is executed through the following procedures.

Application	:(Request made by a recipient country)
Study	:(Basic Design Study conducted by JICA)
Appraisal & Approval	:(Appraisal by the Government of Japan and Approval by the Cabinet of Japan)
Determination of Implementation	:(The Notes exchanged between the Governments of Japan and the recipient country)

- 2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

D2 Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

#11h Thirdly, the Government of Japan appraises the Project to see whether or not it is suitable for Japans Grant Aid Program, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

l.l. Fourth, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2. Basic Design Study

1) Contents of the Study

The aim of the Study (the Basic Design Study), conducted by JICA on a requested project (hereinafter referred to as the Project) is to provide a basic document necessary for the appraisal of the Project by the Japanese Government. The contents of the Study are as follows:

- a) Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for the Projects implementation
- b) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view
- c) Confirmation of items agreed on by both parties concerning the basic concept of the Project
- d) Preparation of a basic design of the Project
- e) Estimation of costs of the Project

B
The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japans Grant Aid Scheme.

J III
S.S.
The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA select (a) firm(s) based on proposals submitted by interested firms. The firm(s)

selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Projects implementation after the Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be repeated.

3. Japans Grant Aid Scheme

1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

2) Exchange of Notes (E/N)

Q Japans Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) The period of the Grant Aid means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed.

l.l. However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However the prime contractors, namely, consulting constructing and procurement firms, are limited to Japanese nationals. (The term Japanese nationals means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) Necessity of the Verification

The Government of recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This Verification is deemed necessary to secure accountability to Japanese taxpayers.

6) Undertakings required to the Government of Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

- 02*
- (1) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction
- 11/16*
- (2) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites
- l. l.*
- (3) To secure buildings prior to the procurement in case the installation of the equipment
- (4) To ensure prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid

(5) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts

(6) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work

(7) Proper Use

The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(8) Re-export

The products purchased under the Grant Aid should not be re-exported from the recipient country.

(9) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as the Bank). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.

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NECESSARY MEASURES TO BE TAKEN BY THE PAKISTAN SIDE

The following items of work related to the realization of the Project shall be executed by the Pakistan side whenever required.

- 1) Civil work for the building contemplated to install the requested equipment, interior work of the building and the relocation work of the existing equipment and facilities
- 2) Electric work for receiving, transforming and distribution of electric power
- 3) Electric lighting work
- 4) Air conditioning work, if necessary
- 5) Telephone and communication facility work
- 6) Utensils and furniture
- 7) To ensure prompt unloading, exempt taxes, and take necessary measures for custom's clearance at the port of disembarkation in Pakistan and inland transportation of the products purchased under the Grant Aid, and bear all expenses for going through formalities
- B*
Ally 8) To exempt Japanese nationals (physical and juridical) from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the verified contracts
- f.f.* 9) To bear commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement (B/A)
- 10) To accord Japanese nationals whose services may be required in connection with the supply of products and services under the verified contract such facilities as may be necessary for their entry into Pakistan and stay therein for the performance of their work

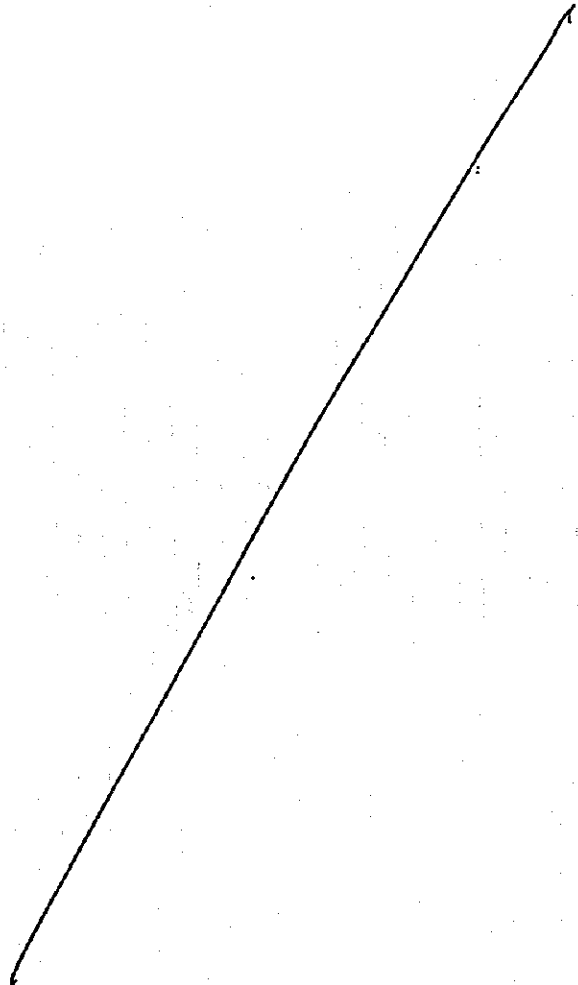
11) To maintain and use properly the equipment procured under the Grant Aid

12) To bear all the expenses other than those to be borne by the Grant Aid for Project

13) To provide necessary permissions, licenses and other authorization for the implementation of the Project

B
All

14) To allocate necessary budgets and assign appropriate academic and administrative staff for proper and effective operation and maintenance of the equipment procured



S.P.

Appendix 5 COST ESTIMATION BORNE BY THE RECIPIENT COUNTRY

The costs of the works to be borne by the Pakistan side in relation with this project are estimated as about 3 million rupees with breakdown as follows;

<u>Costs to be borne by the Pakistan Side</u>	
<u>Item</u>	<u>Rs.(Million)</u>
Interior Works of Labs.	4.665
Remodelling of Central Lab.	2.000
Electrical Wiring/Lighting Work	3.076
Wages of Workers	0.180
Procurement of Fixture & Furnishings	2.033
Procurement of Chemicals	0.280
Bank Commission	4.500
Miscellaneous	0.534

Appendix 6 REFERENCES

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3. National Education Policy and Implementation Programme (O)
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10. Quick Facts, UAF (O)
11. Postgraduate Agricultural Research Station, PARS, UAF (O)
12. Kisht-e-Nau (Silver Jubilee Number), UAF (O)
13. Priority List with Additional Requirement, UAF (C)
14. Layout Plan for Equipment Installation, UAF (C)
15. Floor Plans of UAF (C)
16. Campus General Layout of UAF (C)
17. Campus General Layout of CVS Lahore (C)
18. Answers to the Questionnaire, UAF (C)
19. Answers to the Questionnaire, CVS Lahore (C)

Remarks

(O): Original

(C): Copy

APPENDIX 7 List of Equipment

A. FACULTY OF AGRICULTURE

Sr.No.	Code No.	Name of Equipment	Qty	Sr.No.	Code No.	Name of Equipment	Qty
DEANS OFFICE				38	HOR-31	Slide Projector with screen	1
1	DA-1	Combine Harvester	1	39	HOR-32	Overhead Projector with screen	1
2	DA-2	Photocopy Machine	1	40	HOR-33	Computer with Printer	1
1. DEPARTMENT OF CROP PHYSIOLOGY				41	HOR-35	Sequencing Gel Apparatus and Power Supplies	1
1	CP-01	Porometer	1	42	HOR-36	Geiger Counter	1
2	CP-02	Osmometer	1	43	HOR-37	Growth Chamber	1
3	CP-04	Plant Growth Cabinet	1	44	HOR-38	Refractometer with Digital Printer	1
4	CP-05	Microscope	1	3. DEPARTMENT OF AGRONOMY			
5	CP-06	Oven	1	1	AGR-01	Area/Root Length Measuring System	1
6	CP-07	Rotary Mikrolome	1	2	AGR-02a	Drying Oven (Medium)	1
7	CP-08	Personal Computer with Laser Printer	1	3	AGR-02b	Drying Oven (Large)	1
8	CP-10	Nitrogen Analyzer	1	4	AGR-03	CO ₂ /H ₂ O Analyzer	1
9	CP-11	Foliarimeter	1	5	AGR-04	Infrared Analyzer	1
10	CP-12	Ceptometer	1	6	AGR-05a	i) Top Loading Electronic Balance (3200g x 1g)	1
11	CP-13	Brix Refractometer	1	7	AGR-05b	ii) Digital Top Loading Balance (3200g x 0.01g)	1
12	CP-14	Displacement Transducer	5	8	AGR-05c	iii) Digital Analytical Balance (320g x 0.1mg)	1
13	CP-15	Light Meter	1	9	AGR-06	Water Distillation Apparatus	1
14	CP-16	Portable pH and EC Meter	2	10	AGR-07	Plant Efficiency Analyser	1
15	CP-17	Electronic Balance	1	11	AGR-08	Plant Water Potential Apparatus	1
16	CP-18	Camera with Accessories	1	12	AGR-10	Personal Computer with Printer	1
17	CP-20	Radiation Thermometer	1	13	AGR-12	Plant Growth Cabinet	1
18	CP-21	Chlorophyll Meter	1	14	AGR-13	Chlorophyll Meter	1
2. DEPARTMENT OF HORTICULTURE				15	AGR-14	Sample Mill (3g/sec)	1
1	HOR-01a	Electrophoresis Apparatus Complete with Gel Set	3	16	AGR-15	Sample Mill (Over 4g/sec)	1
2	HOR-01b	Refrigerated Cabinet	3	17	AGR-16	Kjeldahl System with Accessories	1
3	HOR-02	Digital pH Meter	1	18	AGR-17	Micro-Centrifuge Machine	1
4	HOR-03a	Electronic Analytical Balance (45g x 0.01mg)	1	19	AGR-18	Porometer	1
5	HOR-03b	Electronic Analytical Balance (320g x 0.1mg)	1	20	AGR-19	Soil Moisture Meter & Resistance Blocks for different depths	1
6	HOR-04a	Freezer (-30 deg.)	1	21	AGR-20	Moisture-Temperature Meter	2
7	HOR-04b	Freezer (-85 deg.)	1	22	AGR-21	Grain Moisture Meter	1
8	HOR-05	Refrigerator	2	23	AGR-22	Grain Counter	2
9	HOR-06a	i) Vertical Incubator	3	24	AGR-23	Osmometer	1
10	HOR-06b	ii) Orbital shaking Incubator w/shaking plate	2	25	AGR-24	Digital Conductivity Meter	1
11	HOR-07a	(i) Student Dissecting Microscope	5	26	AGR-25	Tube Solarimeter	1
12	HOR-07b	(ii) Epi-Fluorescence Microscope with Camera Attachment	1	27	AGR-26	Ceptometer	1
13	HOR-07c	(iii) Inverted Microscope	1	28	AGR-27	Thermostatic Germinator	1
14	HOR-08	Shaking Water Bath with Accessories	1	29	AGR-28	Air Compressor Unit	2
15	HOR-09	High-speed Micro Centrifuge	1	30	AGR-29	Salinity Bridge Measuring Instrument	1
16	HOR-10a	Dispenser (0.5 - 10 micro l)	1	31	AGR-30	Muffle Furnace with Crucibles	1
17	HOR-10b	Dispenser (5 micro l)	1	32	AGR-31	Micropipette (200, 1000, 5000 µl)	1
18	HOR-10c	Dispenser (5ml)	1	33	AGR-32	Digital Burette	2
19	HOR-12	Vertical Laminar Airflow (Clean Bench)	1	34	AGR-33	Student Stereomicroscope	3
20	HOR-13	Microwave Oven	3	35	AGR-34	Camera with Accessories	1
21	HOR-14	Ultraviolet Hand Lamp	1	36	AGR-35	Slide Projector with Screen	1
22	HOR-15	Water Purifier, Demineralizer	1	37	AGR-36	Overhead Projector with Screen	1
23	HOR-16	Test Tube Mixer	4	38	AGR-38	Polarimeter with Accessories	1
24	HOR-17	Magnetic Stirrer with Hot Plate	3	39	AGR-39	Water Bath	1
25	HOR-18	Stereoscopic Microscope	1	40	AGR-40	Digital Colorimeter	1
26	HOR-19	Electric Stirrer	1	41	AGR-41	Hand Refractometer	1
27	HOR-20	Orbital Shaker with Shaking Plate	1	42	AGR-43	Flame Photometer with Air Compressor	1
28	HOR-21a	Vacuum Pump (15 L/min.)	2	43	AGR-44	Digital pH Meter and Electrode	1
29	HOR-21b	Vacuum Pump (20 L/min.)	2	4. DEPARTMENT OF FORESTRY, RANGE MANAGEMENT & WILDLIFE			
30	HOR-22	Vacuum Drying Oven with vacuum pump	1	1	FRW-01	Refrigerator	1
31	HOR-23	Camera with Accessories	1	2	FRW-02	Chain Saw	1
32	HOR-24	Digital Luxmeter	1	3	FRW-04	Soil Sampler	1
33	HOR-25	Humidifier	2	4	FRW-05	Electronic Balance	1
34	HOR-26	Heating Blocks for Test Tubes	2	5	FRW-06	Deep Freezer	1
35	HOR-27	Drying Cabinet	1	6	FRW-07	Electronic Hand Drill	1
36	HOR-29	Autoclave	1	7	FRW-08	Universal Wood Testing Machine	1
37	HOR-30	PCR Thermocycler	1	8	FRW-09	Forester's Staff Compass	1

Sr.No.	Code No.	Name of Equipment	Qty	Sr.No.	Code No.	Name of Equipment	Qty
9	FRW-11	Dissecting Set	1	9	PBG-06	Mechanical Shaker with shaking plate	1
10	FRW-12	Research Microscope	1	10	PBG-07	Horizontal Gel Electrophoresis Unit	1
11	FRW-24	Trolley Mounted Diesel Pump	1	11	PBG-08	Computer with Printer	1
12	FRW-25	Hand-Moved Sprinkler	1	12	PBG-10	Camera with Attachments	1
13	FRW-26	Pesticide Spraying Machine	1	13	PBG-11	Microphotographic Enlarger	1
14	FRW-28	Portable, Petrol Engine Hedge Cutting Machine	1	14	PBG-13	Laboratory Mill for Oilseeds and Grains	1
15	FRW-29	Portable Circular Saw, Lab. Model	1	15	PBG-14	Digital Soil Tensiometer	2
16	FRW-30	Portable Wood Planer	1	16	PBG-15	Humidiograph	2
17	FRW-33	Portable, Sanding Machine, Electric powered	1	17	PBG-16	Low Temp. Incubator	1
18	FRW-36	Wood Working Hand Tools	1	18	PBG-17	Autoclave	1
19	FRW-37	Personal Computer	1	19	PBG-18	Deep Freezer	1
20	FRW-38	Air Conditioner	1	20	PBG-19a	Dryer (Blower), Large Type	1
21	FRW-40	Light Meter	1	21	PBG-19b	Dryer (Blower), Small Type	1
22	FRW-41	Relative Humidity Meter, Portable Humidiograph	1	22	PBG-20	Seed Sorter and Counter	1
23	FRW-42	Wind Velocity Meter - Anemometer - Portable	1	23	PBG-21	Fluorescent Lamp with Magnifying Lens & UV Cabinet	1
24	FRW-43	Rain Gauges - Simple - Portable	1	24	PBG-22	Thermostatic Germinator	1
25	FRW-44	Electronic Atmosphere Thermometer	1	25	PBG-23	Microscope with Camera Attachment	1
26	FRW-47	Soil Tensiometer	1	26	PBG-24	Water Distillation Apparatus with Deionizer	1
27	FRW-48	Soil Thermometer	1	27	PBG-25	Plant Water Potential Apparatus	1
28	FRW-49	Soil pH Meter	1	28	PBG-26	Digital Grain Moisture Meter	1
29	FRW-51	Electronic Weighing Balance	1	29	PBG-27	Moisture Balance with Printer	1
30	FRW-52	Aximeter	4	7. DEPARTMENT OF SOIL SCIENCE			
31	FRW-53	Refractometer	1	1	SS-01a	Spectrophotometer Student Type	4
32	FRW-54	Dendrometer	2	2	SS-01b	UV-VIS Spectrophotometer	1
33	FRW-55	Planimeter	2	3	SS-02	Automatic Water Distillation Apparatus	1
34	FRW-56	Video Camera	1	4	SS-03	Flame Photometer	4
35	FRW-59	Slide Projector with screen	1	5	SS-04	Portable Digital pH Meter	15
36	FRW-60	Overhead Projector	1	6	SS-05	Kjeldahl Analyzer	5
37	FRW-61	Portable Megaphone	1	7	SS-06	Polarizing Microscope	5
38	FRW-62	Photocamera for making slides with stands	1	8	SS-07	Microscope for biological studies	10
39	FRW-63	Water Flow Meter	1	9	SS-08	Soil Colour Chart	5
40	FRW-64	Animal Weighing Scale with plat form	1	10	SS-09	Tripod	1
41	FRW-65	Stream Water Sediment Sampler Set	1	11	SS-10	Compass	1
42	FRW-66	Portable Water Measuring Flumes	1	12	SS-11	Alidade	1
43	FRW-68	Telescopic Binocular	2	13	SS-12	Barometer Mercury type	1
44	FRW-69	Blender	1	14	SS-13	Thin Layer Chromatography Apparatus	1
5. DEPARTMENT OF PLANT PATHOLOGY				15	SS-15	Crust Hardness Tester	1
1	PP-01	Horizontal Autoclave	1	16	SS-16a	Dispenser Pipette 10 - 100 micro L	2
2	PP-02	Low Temp. Incubator	4	17	SS-16b	Dispenser Pipette 20 - 200 micro L	2
3	PP-03	Stereoscopic Microscope with Camera Attachment	1	18	SS-16c	Dispenser Pipette 100 - 1000 micro L	2
4	PP-04	Spectrophotometer	1	19	SS-17	Digital Chloride Meter	7
5	PP-05	Elisa Plate with Reader	1	20	SS-18	Digital Dissolved Oxygen Meter	1
6	PP-06	Serodia IITV Kit	1	21	SS-19	High Speed Refrigerated Centrifuge	1
7	PP-07	Stand for Dispenser	1	22	SS-20	Stereoscope Microscope	1
8	PP-08	8-Syringe dispenser	1	23	SS-21	Muffle Furnace	2
9	PP-09	Rotary Shaker	1	24	SS-22	Top Loading Electronic Balance	10
10	PP-10	Automatic Slide Stainer	1	25	SS-23	Ion Analyzer (w/different electrodes)	2
11	PP-11	Vacuum Filtration System	1	26	SS-24	Portable Digital Conductivity Meter	10
12	PP-12	Growth Chamber	1	27	SS-25	Centrifugal Automatic Particle Analyzer	5
13	PP-14	Rotary Evaporator	1	28	SS-26	Overhead Projector with screen	3
14	PP-15	Microscope with Phase Contrast Equipment	1	29	SS-27	Slide Projector with screen	3
15	PP-18	Table Top Centrifuge	1	30	SS-29	Computer with Printer	4
16	PP-19	Computer with Printer	1	31	SS-31	Osmometer	1
6. DEPARTMENT OF PLANT BREEDING AND GENETICS				32	SS-32	Orbital Shaker	1
1	PBG-01	Student Binocular Microscope	5	33	SS-33	Shaking Water Bath	1
2	PBG-02a	i) Electronic Balance 45g x 0.01mg	1	34	SS-34	Centrifuge Machines (Table type)	6
3	PBG-02b	ii) Electronic Balance 320g x 0.1mg	1	35	SS-35	Microwave Oven	2
4	PBG-02c	iii) Electronic Balance 430g x 0.001g	1	36	SS-36	Magnetic Stirrer	12
5	PBG-02d	iv) Electronic Balance 4300g x 0.1g	1	37	SS-37	Ultrasonic Homogenizer	2
6	PBG-02e	v) Electronic Balance 12200g x 0.1g	1	38	SS-38	Forced Air Oven	2
7	PBG-03	FT-IR Spectrophotometer with Accessories	1	39	SS-39	Vacuum Pump	2
8	PBG-04	Hand Refractometer	5	40	SS-40	Drying Oven	4

Sr.No.	Code No.	Name of Equipment	Qty
41	SS-41	Slide Cabinet	1
42	SS-42	Inverted Microscope System	1
43	SS-43	Filter Press	2
44	SS-44	Hot Plates	6
45	SS-45	Ultrasonic Bath	2
46	SS-46	Autoclave (Vertical)	1
47	SS-47	Analytical Balance	2
48	SS-48	Clean Bench	1
49	SS-49	Light Meter	1
50	SS-50	Ultra Low Freezer	1
51	SS-51	Growth Chamber	1
52	SS-52	Irrigation Pump with Diesel Engine	2
53	SS-55	Digital Indicating Controller Air Conditioner	3
54	SS-57	Freeze Drying Apparatus	1
55	SS-60	Gel Electrophoresis Apparatus	1
56	SS-61	Colony Counter	1
57	SS-62	Point Counter	1
58	SS-64	Camera	1
59	SS-65	Rotary Evaporator	1
60	SS-66	Megaphone	1
8. DEPARTMENT OF AGRIL. ENTOMOLOGY			
1	ENT-01	Stereoscopic Zoom Microscope with Camera Attachment	1
2	ENT-02	Student stereomicroscope	10
3	ENT-03	Low Temp. Incubator	1
4	ENT-04	Oven	1
5	ENT-05	Drying Cabinet	1
6	ENT-06	Humidifier	2
7	ENT-07	Rotary Microtomes	1
8	ENT-08	Paraffin Bath	2
9	ENT-09	Slide Projector with screen	1
10	ENT-10	Top Loading Electronic Balance	1
11	ENT-11	Analytical Electronic Balance	1
12	ENT-12	Stereomicroscope with Illuminator	10
13	ENT-13	Insect Growth Chamber	1
14	ENT-14	Computer with Printer	1
15	ENT-15a	Entomological Pins, No.16	1000
16	ENT-15b	Entomological Pins, No.20	100

B. FACULTY OF AGRICULTURAL ENGINEERING & TECHNOLOGY

Sr.No.	Code No.	Name of Equipment	Qty	Sr.No.	Code No.	Name of Equipment	Qty
DEANS OFFICE				6	BE-07	Portable Dissolved Oxygen Meter	2
1	DAB-1	Photocopy Machine	1	7	BE-08	Water Quality Checker	2
9. DEPARTMENT OF FOOD TECHNOLOGY				8	BE-09	Centrifuge	1
1	FT-01	Digital Balance	2	9	BE-10	Soil Test Kit	2
2	FT-02	Colony Counter	1	10	BE-11	Automatic Soil Moisture Meter	1
3	FT-03	Rotary Evaporator	1	11	BE-12	F.C. Meter (Soil Salt Meter)	2
4	FT-04	Hot Plate	2	12	BE-13	Soil Hardness Tester	2
5	FT-05	Melting Point Apparatus	1	13	BE-14	Field Soil Bulk Density Meter	2
6	FT-06	Soxhlet Extraction Unit	1	14	BE-15	Cone Penetrometer	2
7	FT-07	Ultraviolet Lamp	2	15	BE-16	Digital Balance	2
8	FT-08	Lowhead Tinto Meter (digital readout)	1	16	BE-17	Chloride Content Meter	2
9	FT-11	Slide Projector with screen	1	17	BE-18	T.D.S. Meter	1
10. DEPARTMENT OF IRRIGATION AND DRAINAGE				18	BE-20	Refrigerator	1
1	ID-01	Metacentric Height Apparatus	1	19	BE-21	Air conditioner	1
2	ID-02	Calibration of Pressure Gauge Apparatus	1	20	BE-23	Computer with Printer	1
3	ID-03	Osborne Reynolds Demonstration	1	13. DEPARTMENT OF FARM MACHINERY & POWER			
4	ID-04	Laminar Flow Table, Hele-shaw Model	1	1	FMP-01	Fork Lift	1
5	ID-05	Pelton Wheel Turbine Apparatus	1	2	FMP-02	Capacitance Transducer	5
6	ID-06	Apparatus for Bernoulli's Theorem	1	3	FMP-03	Resistance Transducer	1
7	ID-07	Viscometer	1	4	FMP-05	Bourdon Tube Pressure Gauges	5
8	ID-09	Fluid Friction Loss Apparatus	1	5	FMP-06	Oscilloscope	1
9	ID-10	Water Hammer Apparatus Pressure Surge	1	6	FMP-07	Universal Counter	5
10	ID-11	Flow Current Meters	2	7	FMP-09	Dead Weight Tester	1
11	ID-12	Sediment Samplers	2	8	FMP-10	Diaphragm Gauges	1
12	ID-13	Motorized Direct Shear Apparatus	1	9	FMP-13	Flowmeter	2
13	ID-14	Motorized Liquid Limit Set	4	10	FMP-15	Magnetic Flowmeter	1
14	ID-15	Plastic & Shrinkage Limit Set	4	11	FMP-17	Strain Gauge Sets	1
15	ID-16	Constant Head Permeameter	2			Strain Gauges	10
16	ID-17	Falling Head Permeameter	2			Dynamic Strain Gauges	10
17	ID-18	Hydrometer	2			Strain Amplifier	1
18	ID-19	ASTM Standard Sieves Set	1			Oscillographic Recorder	1
19	ID-21	Electrical Resistivity Apparatus	1	12	FMP-18	Vibrometer	1
20	ID-22	Seismograph	1	13	FMP-19	Velocity Meter	1
21	ID-23	Sand Box Apparatus	1	14	FMP-20	Slip Ring	1
22	ID-24	Submersible Pump Unit	1	15	FMP-21	Electronic Balance (3100g x 0.01g)	1
23	ID-25	Planimeter	2	16	FMP-22	Electronic Balance (310g x 0.001g)	1
24	ID-26	Working Models of Pumps	1	17	FMP-23	Digital Micrometer	1
25	ID-27	Digital Balance (battery operated)	2	18	FMP-25	Amplifier	1
26	ID-28	Speedy Soil Moisture Apparatus	1				
27	ID-29	Soil Moisture Tensiometer	1				
28	ID-30	Pressure Membrane Apparatus with Attachment	1				
29	ID-31	Digital pH/MV Meter, Portable	2				
30	ID-32	Bench type pH Meter	1				
31	ID-33	Digital Conductivity Meter	1				
32	ID-34	Single-Beam Spectrophotometer	1				
33	ID-35	Flame Photometer	1				
34	ID-36	Theodolite	2				
35	ID-37	Laser Aligner	1				
36	ID-38	Overhead Projector	1				
37	ID-39	Computer with Printer	1				
38	ID-40	Centrifugal Portable Pumping Unit	1				
11. DEPARTMENT OF FIBER TECHNOLOGY							
1	FIBT-01	Cotton Fiber Measuring System	1				
12. DEPARTMENT OF BASIC ENGINEERING							
1	BE-01	Universal Tensile and Compressive Testing Machine	1				
2	BE-03	Torsion Spring Testing Apparatus	1				
3	BE-04	Nitrogen Analyzer	1				
4	BE-05	Waste Water Treatment Apparatus	1				
5	BE-06	Portable Digital Turbidity Temperature Meter	1				

C. FACULTY OF BASIC SCIENCES

Sr.No.	Code No.	Name of Equipment	Qty	Sr.No.	Code No.	Name of Equipment	Qty
DEAN'S OFFICE				4	PHY-04	Regulated Power Supply	4
1	DBS-1	Photocopy Machine	1	5	PHY-05	Digital Multimeter	4
14. DEPARTMENT OF BOTANY				6	PHY-06	Electron Spin Resonance System	1
1	BO-01	Monocular Microscope	10	7	PHY-08	Temperature Control Unit	2
2	BO-02	Student Binocular Microscope	5	8	PHY-10	Digital Frequency Counter	2
3	BO-03	Microscope with Camera Attachment & Phase Contrast	1	9	PHY-11	Conductivity Meter	1
4	BO-05	Analytical Electronic Balance	1	10	PHY-14	Basic Microwave Optic System	1
5	BO-06	Top Loading Electronic Balance	1	11	PHY-15	Vacuum Pump	1
6	BO-07	EC Meter	1	12	PHY-16	Flux Meter	2
7	BO-08	pH Meter, Digital	1	13	PHY-17	Power Amplifier	4
8	BO-09	Flame Photometer with Air Compressor	1	14	PHY-18	Student Microscope	1
9	BO-10	Plant Growth Chamber	1	15	PHY-20	Recorder	1
10	BO-11	Double Beam UV/VIS Spectrophotometer	1	16	PHY-21	Overhead Projector with Screen	1
11	BO-12	Electrophoresis Apparatus with Power Supply	1	17	PHY-22	Slide Projector with Screen	1
12	BO-13	Porometer	1	18	PHY-23	Computer with printer	1
13	BO-14	Photosynthesis Measurement System	1	19	PHY-24	Ultrasonic Cleaner	1
14	BO-15	Centrifuge with Rotor	1	20	PHY-25	Sound Level Meter	2
15	BO-16	Orbital Shaker with Shaking Plate	1	21	PHY-27	Laser Beam Expander	1
16	BO-17	Kjeldahl System	1	22	PHY-28	Liquid Nitrogen Cryostat	1
17	BO-18	Low Temp. Incubator	1	23	PHY-30	Platinum Resistance Thermometer	4
18	BO-19	Rotary Shaker with Accessories	1	24	PHY-31	Cryostat	1
19	BO-20	Forced Convection Constant Temp. Oven	1	25	PHY-32	Agate Mortar and Pestle	1
20	BO-21	Osmometer	1	26	PHY-34	Tube Furnace	1
21	BO-22	Dissolved Oxygen-BOD Meter	1	27	PHY-35	Power Supply	1
22	BO-23	Water Tension Testing Apparatus for plants	1	28	PHY-37	Standard Resistors (1Ω, 10Ω, 100Ω, 1000Ω)	4
23	BO-24	Autoclave	1	29	PHY-38	Decade Resistance Box	1
24	BO-25	Automatic Chloride Analyser	1	30	PHY-40	Power Supply	1
15. DEPARTMENT OF ZOOLOGY & FISHERIES				31	PHY-41	Electromagnet	1
1	ZF-01	Table-top Centrifuge	1	17. DEPARTMENT OF CHEMISTRY			
2	ZP-02	Multi Timer	1	1. CHEMISTRY SECTION			
3	ZP-03	Electronic Balance	1	1	CHM-02	FT-IR Spectrophotometer	1
4	ZP-04	Typewriter	1	2	CHM-03	Gas Chromatograph	1
5	ZP-05	Ribbon, 6 pcs/box	10	3	CHM-04	Double-Beam UV/VIS Spectrophotometer	1
6	ZP-06	Lab. Labels (5m/roll)	20	4	CHM-06	Water Deionizer	1
7	ZP-12	Forced Air Oven	1	5	CHM-07	Centrifuge with rotors	2
8	ZP-14	Overhead Projector with Screen	1	6	CHM-08	pH Meter, Digital	2
9	ZP-15	Slide Projector with screen	1	7	CHM-09	Rotary Evaporator	1
10	ZP-16	Blender	1	8	CHM-10	Muffle Furnace	1
11	ZP-24	Single-Beam UV/VIS Spectrophotometer	1	9	CHM-11	Vacuum Drying Oven with vacuum pump	1
12	ZP-25	Conductivity Meter, Portable	1	10	CHM-12	Ion Meter with CO ₂ Electrode	1
13	ZP-27	Dissolved Oxygen Meter	1	11	CHM-13	Vacuum Pump	2
14	ZP-28	Forced Air Oven	1	12	CHM-15	Flame Photometer	1
15	ZP-29	Soxhlet Extraction Unit	1	2. BIOCHEMISTRY SECTION			
16	ZP-31	Muffle Furnace	1	13	CHM-16	UV/VIS Spectrophotometer	2
17	ZP-33	Constant Temperature Circulator	1	14	CHM-17	High Speed Refrigerated Centrifuge wholers	1
18	ZP-34	Electronic Balance	1	15	CHM-18	Low Speed Centrifuge, Table-top	1
19	ZP-35a	Dispenser 0.2 - 1.0ml	1	16	CHM-19	Microscope with Camera Attachment and Accessories	1
20	ZP-35b	Dispenser 0.4 - 2.0ml	1	17	CHM-20	Incubator	1
21	ZP-35c	Dispenser 1.0 - 5.0ml	1	18	CHM-21	Freezer	1
22	ZP-35d	Dispenser 2.0 - 10.0ml	1	19	CHM-22	Fermenter for microorganism	1
23	ZP-35e	Dispenser 5.0 - 30.0ml	1	20	CHM-23	Water Distillation Apparatus	1
24	ZP-36	Hot Plate with stirrer	1	21	CHM-24	Vertical Laminar Air Flow Clean Bench type	1
25	ZP-37	Stereoscopic Zoom Microscope	1	22	CHM-25	Autoclave	1
26	ZP-38	Multi-Function Analytical Balance	1	23	CHM-26a	Variable Volume Pipeters 0.5 - 10 μL	2
27	ZP-39	Slide Cabinet	1	24	CHM-26b	Variable Volume Pipeters 2 - 20 μL	2
28	ZP-41	Electrophoresis Equipment	1	25	CHM-26c	Variable Volume Pipeters 10 - 100 μL	2
16. DEPARTMENT OF PHYSICS				26	CHM-26d	Variable Volume Pipeters 20 - 200 μL	2
1	PHY-01	Oscilloscope 20MHz/DuRance	2	27	CHM-26e	Variable Volume Pipeters 100 - 1000 μL	2
2	PHY-02	Function Generator	2	3. HUMAN ENVIRONMENTAL SECTION			
3	PHY-03	Frequency Counter	3	28	CHM-27	High Volume Air Sampler with Air Filters	1

Sr.No.	Code No.	Name of Equipment	Qty
29	CHM-28	BOD & COD Analyzer	1
31	CHM-29	Chemical Testing Equipment	1
32	CHM-30	Pollution Monitoring Station	1
33	CHM-31	Water Quality Checker	1
18. Dept. of Math & Statistics			
1	COM-01a	Computer	2
2	COM-01b	Computer for Students	8
3	COM-02	Printer	6

D. FACULTY OF ANIMAL HUSBANDRY

Sr.No.	Code No.	Name of Equipment	Qty	Sr.No.	Code No.	Name of Equipment	Qty
DEAN'S OFFICE				51	LMD-54b	Personal Computer with Printer	1
1	DAH-01	Copying Machine	1	52	LMD-55	Ice-cube Machine	1
2	DAH-02	Video Camera	1	3. LIVESTOCK FARM			
19. DEPARTMENT OF LIVESTOCK MANAGEMENT				53	LML-02	Drenching Gun	2
1. WOOL LAB.				54	LML-03	Electric Dehorner	2
1	LMW-01	Wool Finess Meter with Air Compressor	1	55	LML-04	Electric Shearing Machines	2
2	LMW-03	Fibre Tensile Strength Tester	1	56	LML-05	Electric Precision Thermo-Hydro Barograph	1
3	LMW-06	Trash Separator	1	57	LML-06	Livestock Scale with dial and plat form	1
4	LMW-09	Staple Diagram Apparatus	1	58	LML-07	Dipping Tanks/Vats	1
2. DAIRY LAB.				59	LML-08	Tattooing Apparatus	1
1	LMD-01	Fiberoptic Analyzer	1	20. DEPARTMENT OF ANIMAL BREEDING AND GENETICS			
2	LMD-02	Animal Gauge	2	1. CYTOGENETICS LAB (CRL)			
3	LMD-03	Artificial Insemination Instrument Set	1	1	CRL-01	Electronic Top Loading Balance	1
4	LMD-04	Artificial Respiratory Apparatus	1	2	CRL-03	Touch Mixer with replacement foam pads	1
5	LMD-05	Automatic Syringe	2	3	CRL-05	Countdown Alarm Timer	1
6	LMD-06	Blood Taking Loop	2	4	CRL-06a	Dispenser/Pipetter 0.5 - 10 µL	1
7	LMD-07	Bull Holder	1	5	CRL-06b	Dispenser/Pipetter 2 - 20 µL	1
8	LMD-08	Bull Ring	2	6	CRL-06c	Dispenser/Pipetter 10 - 100 µL	1
9	LMD-09	Bull Ring Pliers	1	7	CRL-06d	Dispenser/Pipetter 20 - 200 µL	1
10	LMD-10	Butter Fat Test Set	1	8	CRL-06e	Dispenser/Pipetter 100 - 1000 µL	1
11	LMD-11	Chemical Balance	1	9	CRL-06f	Disposable Tips for Each Pipette	1
12	LMD-12	Chronometer	1	10	CRL-07	Autoclave	1
13	LMD-13	Cow Lift	2	11	CRL-08	Water Distillation Apparatus	1
14	LMD-14	Cow Model	1	12	CRL-11	Biological Safety Cabinet	1
15	LMD-15	Dehorning Set	2	13	CRL-12	Liquid Media/Reagent Filtration Kit	1
16	LMD-17	EPG Counting Plate	1	14	CRL-13	Filter Device for sterilizing filtration	4
17	LMD-18	Estrus Tester	1	15	CRL-16	Syringe Filter	1
18	LMD-19	Heat Mount Detector	1	16	CRL-18	Audio visual Equipment	1
19	LMD-20	Hoof Examination Instrument	1	2. DATA PROCESSING LABORATORY (DPL)			
20	LMD-21	Hoof Scraping Instruments	1	1	DPL-09	Computer with Printer	1
21	LMD-22	Horse Gauge	2	3. CATTLE CROSS BREEDING PROJECT (CCP)			
22	LMD-24	Kjeldahl Method Nitrogen/Protein Analyzer	1	1	CCP-01	Livestock Weighing Scale	1
23	LMD-25	Lactometer	10	2	CCP-02	Tattooing Apparatus	2
24	LMD-26	Long Gloves	6	3	CCP-05	Portable Milking Machine	1
25	LMD-27	Mammary Net	2	4	CCP-06	Mobile Sprayer	1
26	LMD-28	Mastitis & Abnormal Milk Test Set	1	4. ARTIFICIAL INSEMINATION/SEMEN PROCESSING UNIT (AIPU)			
27	LMD-29	Mincer-Grinder	1	1	AIPU-01	Microscope	1
28	LMD-30	Meat Saws	2	2	AIPU-02	General Purpose Refrigerator	1
29	LMD-31	Metallic Syringe	6	3	AIPU-03	Incubator	1
30	LMD-32	Milk Bacteria Tester	1	4	AIPU-04	Water Bath Thermostatic Control	1
31	LMD-33	Milk Testing Equipment	1	5	AIPU-06	Air Conditioner Split Unit	1
32	LMD-34	Milking Machine Model	1	6	AIPU-07	Artificial Vagina	10
33	LMD-35	Mouth Gauge	1	7	AIPU-08	Liquid Nitrogen Container	1
34	LMD-36	Non-Kick Clamp	3	8	AIPU-09	U.V. Equipment for sterilization	1
35	LMD-37	Nose Twitch	4	9	AIPU-10	Dial Thermometer	6
36	LMD-38	Pelvis Meter	2	21. DEPARTMENT OF ANIMAL NUTRITION			
37	LMD-39	Portable Digital pH Meter	1	1	AN-01	Gas Chromatograph	1
38	LMD-40	Post Mortem Meat Inspection Tool Set	1	2	AN-02	Grain Tester	1
39	LMD-41	Pregnancy Detector for Cow	1	3	AN-03	Shaker	1
40	LMD-44	Sperm Examination Plate	1	4	AN-04	Epi-Fluorescence Microscope	1
41	LMD-45	Sperm Counter, Thomas's	1	5	AN-05	Film Evaporator	1
42	LMD-46	Hanging Scale	1	6	AN-06	Fluorescence Spectrophotometer	1
43	LMD-47	Strip Cup	4	7	AN-07	Fibertech	1
44	LMD-48	Syringe	3	8	AN-08	Grinding Mill	1
45	LMD-49	Toe Band, 3 pcs/set	2	9	AN-09	Fermentor (7L)	1
46	LMD-50	Refrigerated Centrifuge	1	22. DEPARTMENT OF POULTRY HUSBANDRY			
47	LMD-51	Vaginal Flushing Canula	1	1. HARDWARE FOR PERSONAL COMPUTER			
48	LMD-52	Water Distillation Apparatus	1	1	PH-01	Computer with Printer	1
49	LMD-53	Weighing Tapes	6	2. GRADUATE STUDENTS LAB.			
50	LMD-54a	Audio Visual Equipment	1	2	PH-08a	Electronic Balance, Analytical	1

Sr.No.	Code No.	Name of Equipment	Qty
3	PH-08b	Electronic Balance, Top-loading	1
4	PH-09	Student Microscope	2
5	PH-10	Audio Visual Apparatus	1
6	PH-11	Magnetic Stirrer (Hot Plate)	1
7	PH-12	Egg Incubator Set	1
		Incubator	1
		Egg Shell Thickness Meter	1
		Egg Meter	1
		Egg Quality Exam. Stand	1
		Egg Testing Equipment	1
8	PH-13	Centrifuge with rotor	1
9	PH-14	Centrifuge Tubes	1
10	PH-15	Water Distillation Apparatus	1
11	PH-16	Water Bath	1
12	PH-17	Furnace	1
3 POULTRY RESEARCH CENTRE			
13	PH-18	Deep Freezers	1
14	PH-22	Incubator	1
15	PH-23	Automatic Drinking Units	1
16	PH-24	Automatic Tube Feeders Units	1
17	PH-25	Triple Beam Balance	1
18	PH-26	Spring Balance	1
19	PH-27	Power Sprayer	1
20	PH-28	Single-Beam UV/VIS Spectrophotometer	1

E. FACULTY OF VETERINARY SCIENCE

Sr.No.	Code No.	Name of Equipment	Qty	Sr.No.	Code No.	Name of Equipment	Qty
DEAN'S OFFICE				13	VPR-11	Deep Freezer	1
1	DVS-1	Photocopy Machine	1	14	VPR-12	Electrobetter with accessories	1
23. DEPARTMENT OF VETERINARY ANATOMY				15	VPR-13	Mini-gel Electrophoresis Apparatus	1
1	VA-01	pH Meter Digital Portable with battery	1	16	VPR-14	Top Loading Balance	1
2	VA-02	Student Binocular Microscope	6	17	VPR-15	Laminar Flow Cabinet, Vertical type	1
3	VA-03	Research Microscope with Camera Attachment	1	18	VPR-16	Computer with Printer	1
4	VA-04	Epidiascope	1	19	VPR-17	Microwave Oven	1
5	VA-05	Epidiascope Bulbs	12	20	VPR-18	Student Microscope	10
6	VA-06	Vacuum Oven	1	21	VPR-19	Slide Projector with Screen	1
7	VA-07	Air & Vacuum Pump	1	26. DEPARTMENT OF CLINICAL MEDICINE AND SURGERY			
8	VA-08	Slide Projector with Screen	1	1	CMS-01	Portable Ultrasound Diagnostic System	1
9	VA-09	Cryostat with Accessories	1	2	CMS-02	Double-Beam UV/VIS Spectrophotometer	1
10	VA-10	Hot Plate & Stirrer	1	3	CMS-03	Metal Detector (for diagnosis of nails in animals)	1
11	VA-11	Weighing Balance, Electric	1	4	CMS-04	pH Meter, Digital	1
24. DEPARTMENT OF VETERINARY PATHOLOGY				5	CMS-05	Laminar flow Cabinet	1
1	VP-01	Research Microscope with Camera Attachment	1	6	CMS-06	Research Microscope	1
2	VP-02a	Binocular Microscope	5	7	CMS-07	Electrophoresis Unit with power supply	1
3	VP-02b	Microscope, Built-in Photomicroscopic System	1	8	CMS-08	Transilluminator with polaroid camera	1
4	VP-03	Overhead Projector with Screen	1	9	CMS-09	Hand Held Air Flow Meter (Vane type)	1
5	VP-04	Electric Incubator	1	10	CMS-10	Dual Channel Vacuum Recorder	1
6	VP-05a	i) Micropipettes 0.5 - 10 micro L	1	11	CMS-11	Autoclave	1
7	VP-05b	ii) Micropipettes 10 - 100 micro L	1	12	CMS-12	Vortex Mixer	1
8	VP-05c	iii) Micropipettes 100 - 1000 micro L	1	13	CMS-13	Centrifuge, small type	1
9	VP-05d	iv) Micropipettes 1000 - 5000 micro L	1	14	CMS-14	Large Animal (Hydraulic Lift) Operation Table	1
10	VP-06a	Dispenser with 1 bottle	1	15	CMS-15	X-Ray Processing Unit	1
11	VP-06b	Dispenser with 2 bottles	1	16	CMS-16	X-Ray Curtain	1
12	VP-07	pH Meter, Digital	1	27. DEPARTMENT OF ANIMAL REPRODUCTION			
13	VP-10	Hand Refractometer	5	1	AR-01	Binocular Microscope for students	1
14	VP-11	Clinical Refractometer	2	2	AR-02	Research Microscope	1
15	VP-12	Homogenizer	1	3	AR-03	Inverted Microscope	1
16	VP-13	Hot Plate with Magnetic Stirrer	1	4	AR-04	Stereomicroscope w/photographic attachment	1
17	VP-14	Single-Beam UV/VIS Spectrophotometer	1	5	AR-05	High Speed Micro Centrifuge, Refrigerated	1
18	VP-15	Double-Beam UV/VIS Spectrophotometer	1	6	AR-06	Top Loading Balance	1
19	VP-16	Blood Cell Counter	1	7	AR-07	Analytical Balance	1
20	VP-17	Hemoglobinometer	1	8	AR-08	Low Temp. Incubator	1
21	VP-18	Rotary Microtome with Disposable Knives	1	9	AR-09	Hot Plate Magnetic Stirrer	1
22	VP-20	Tissue Embedding System	1	10	AR-10	Double-Beam UV/VIS Spectrophotometer	1
23	VP-21	Autopsy Tables for large animals	1	11	AR-11	Glucometer	1
24	VP-22	Autopsy Tables for small animals	1	12	AR-12	Ultrasound Scanner with Transducer & Printer	1
25	VP-23a	Electric Saw for Autopsy (200mm blade)	1	28. DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY			
26	VP-23b	Electric Saw for Autopsy (400mm blade)	1	1	PPH-01	Automatic Analyzer for Lab.	1
27	VP-24	Autopsy Set for large animals	1	2	PPH-02	Gamma Counter	1
28	VP-25	Slide Projector with Screen	1	3	PPH-03	Automatic Pipettes Sets 20-1000 micro L	1
29	VP-26	ELISA Reader Complete Set	1	4	PPH-04	Students Microscope	10
30	VP-27	All Glass Distillary Apparatus	3	5	PPH-05	Double-Beam UV/VIS Spectrophotometer	1
31	VP-28	Laminar Flow	1	6	PPH-06	Single Channel Physiological Recorder	1
32	VP-30	Compact Balance	1	7	PPH-07	Chamber for Langendorff Preparation	1
25. DEPARTMENT OF VETERINARY PARASITOLOGY				29. DEPARTMENT OF VETERINARY MICROBIOLOGY			
1	VPR-01	Sonicator	1	1	VM-01a	Mini-gel Electrophoresis Apparatus	1
2	VPR-02	Ultra Homogenizer	1	2	VM-01b	Electrobetter	1
3	VPR-03a	12-channel Micropipettes, 5 - 50 micro L	1	3	VM-02	Ultraviolet Viewing Cabinet	1
4	VPR-03b	12-channel Micropipettes, 40 - 200 micro L	1	4	VM-03	Water Bath with circulator	1
5	VPR-04a	Single Channel Micropipettes, 75 micro L	1	5	VM-04a	i) Multichannel Pipettes 4-channel	1
6	VPR-04b	Single Channel Micropipettes, 100 micro L	1	6	VM-04b	ii) Multichannel Pipettes 8-channel	1
7	VPR-05	CO ₂ Incubator	1	7	VM-04c	iii) Multichannel Pipettes 12-channel	1
8	VPR-06	pH Meter, Digital	1	8	VM-04d	iv) Multichannel Pipettes Tips	1
9	VPR-07	Double-Beam UV/VIS Spectrophotometer	1	9	VM-05a	i) High Speed Micro Centrifuge	1
10	VPR-08	Inverted Microscope	1	10	VM-05b	ii) Lab. Centrifuge	1
11	VPR-09	ELISA Reader	1	11	VM-06a	i) Incubator	1
12	VPR-10	Refrigerator	1	12	VM-06b	ii) Egg Incubator	1

Sr.No.	Code No.	Name of Equipment	Qty
13	VM-06c	iii) Battery Brooder	1
14	VM-06d	iv) Hot Air Oven	1
15	VM-07a	Liquid Nitrogen Container (3.6L)	1
16	VM-07b	Liquid Nitrogen Container (50L)	1
17	VM-08	Refractometer (Handheld type)	1
18	VM-09	Test Tube Shaker	2
19	VM-10	Flask Shaker	1
20	VM-11a	Micro Pipette 20 micro L with 5,000 Tips	2
21	VM-11b	Micro Pipette 200 micro L with 5,000 Tips	2
22	VM-11c	Micro Pipette 1000 micro L with 5,000 Tips	1
23	VM-12	Dry Ice-making Machine with CO ₂ Cylinder	1
24	VM-13	Single-Beam UV/VIS Spectrophotometer	1
25	VM-14	Electrophoresis Gel Elutor	1
26	VM-15	Gel Drying System	1
27	VM-16	96-wells Dotblot Manifold	1
28	VM-17a	i) Binocular research microscope	1
29	VM-17b	ii) Binocular microscope	5
30	VM-18	Autoclave Vertical	1
31	VM-19	Magnetic Stirrer	2
32	VM-20a	pH Meter (Digital), Lab. Type	2
33	VM-20b	pH Meter (Digital), Portable	1
34	VM-21	Slide Projector with screen	1
35	VM-22	Overhead Projector from Book (Epidiascope) with Screen	1
36	VM-23	Water Distillation Apparatus	1
37	VM-24	Motorised Diluters	2
38	VM-25	Auto Pipetters	2
39	VM-26	Vacuum/Pressure Pump	2
40	VM-27	Filter Assembly	4

F. COLLEGE OF VETERINARY SCIENCE, LAHORE

Sr.No.	Code No.	Name of Equipment	Qty	Sr.No.	Code No.	Name of Equipment	Qty
30. VARIOUS DEPARTMENT OF COLLEGE OF VET. SCIENCES, LAHORE				60	CVS-69	X-Ray (500mA)	1
1	CVS-01	Student Microscope	20	61	CVS-70	Anesthesia Machine	1
2	CVS-02	Livestock Scale	1	62	CVS-71	Photocopier	1
3	CVS-03	Model of Eyeball	3	63	CVS-72	Computer with Printer	2
4	CVS-04	Model of Cow	1	64	CVS-73	Overhead Projector with Screen	1
5	CVS-05	Male Muscle Figure	1	65	CVS-74	Slide Projector with Screen	1
6	CVS-07	Vacuum Pump	1				
7	CVS-08	Flame Photometer	2				
8	CVS-09	Autoclave	1				
9	CVS-10	Pipet Washer	2				
10	CVS-11	Water Distillation Apparatus	1				
11	CVS-12	Cellulose Acetate Electrophoresis Apparatus	1				
12	CVS-13	Gas Chromatograph	1				
13	CVS-15	Atomic Absorption Spectrophotometer	1				
14	CVS-16	Sledge Microtome	1				
15	CVS-17	Microscope	1				
16	CVS-18	Cryostat Microtome	1				
17	CVS-19	Ice Maker	1				
18	CVS-20	Electronic Balance	3				
19	CVS-21	Magnetic Stirrer	3				
20	CVS-22	Shaker with shaking plate	1				
21	CVS-23	High-speed Refrigerated Centrifuge	1				
22	CVS-24	Homogenizer with Generator	1				
23	CVS-25	Fume Hood	1				
24	CVS-26	Thin Layer Chromatography Apparatus	1				
25	CVS-27	Fraction Collector	1				
26	CVS-28	Crude Fiber Apparatus	1				
27	CVS-29	Infrared Moisture Meter	1				
28	CVS-30	pH Meter, Digital	5				
29	CVS-31	Particle Analyzer	1				
30	CVS-32	Double-Beam UV/VIS Spectrophotometer	1				
31	CVS-34	Small Rotary Microtome	1				
32	CVS-35	CO ₂ Incubator	1				
33	CVS-36	Inverted Microscope	1				
34	CVS-37	Water Bath	2				
35	CVS-39	Roller Tube Culture Incubator	1				
36	CVS-41	Compot	1				
37	CVS-42	Illuminated Incubator	1				
38	CVS-43	Programmable Bath	2				
39	CVS-44	Convection Oven	1				
40	CVS-45	Micropipette	4				
41	CVS-46	Turbidimeter	1				
42	CVS-48	Egg Incubator	1				
43	CVS-49	Rotary Vacuum Evaporator	1				
44	CVS-50	Fluorescence Spectrophotometer	1				
45	CVS-51	Vacuum Oven with vacuum pump	1				
46	CVS-53	Metabolic Manometer	1				
47	CVS-54	Stereoscopic Microscope	5				
48	CVS-55	Bio Mixer	1				
49	CVS-56	Metal Cage	20				
50	CVS-57	Homogenizer	1				
51	CVS-58	Incubator	1				
52	CVS-59	Forceps	2				
53	CVS-60	Operating Table for Small Animals	1				
54	CVS-61	Dissection Table	4				
55	CVS-62	Horizontal Laminar Air Flow Type Clean Bench	1				
56	CVS-63	Micro Kjeldahl Digestion Apparatus	1				
57	CVS-64	Low Temp. Incubator	1				
58	CVS-65	Large Volume Refrigerated Centrifuge	1				
59	CVS-67	Platform Scale	1				

G. DIRECTORATE OF AGRICULTURE EDUCATION & EXTENSION

Sr.No.	Code No.	Name of Equipment	Qty
31. VARIOUS DEPARTMENTS OF DIVISION OF EDUCATION & EXTENSION			
1	DEE-01	Video Camera, VHS	1
2	DEE-04	VCR with Remote Control	1
3	DEE-11	Color TV, 29"	1
4	DEE-29	Portable Tape Recorder	1
5	DEE-33	Megaphone	2
6	DEE-42	Over Head Projector with Screen	4
7	DEE-43	Slide Projector with Screen	2
8	DEE-48	Camera 35mm	1
9	DEE-51	Flash Gun Heavy Duty	1
10	DEE-54	Micro Lens, 55 (1:2.8)	1
11	DEE-55	Telezoom Lens	1
12	DEE-56	Wide Angle Lens	1
13	DEE-57	Camera Stand	1
14	DEE-63	Computer with Printer	1
15	DEE-64	Photocopier	1
16	DEE-67	Top Loading balance	1
17	DEE-68	Forced Air Oven	1
18	DEE-69	Muffle Furnace	1
19	DEE-70	Soxhlets Apparatus	1
20	DEE-71	Micro Kjeldahl Digestion & Distillation Assembly (Small)	1
21	DEE-73	Bomb Calorimeter	1
22	DEE-74	Centrifuge	1
23	DEE-75	Water Bath	1
24	DEE-76	Single-Beam UV/VIS Spectrophotometer	1
25	DEE-77	Flame Photometer with Air Compressor	1
26	DEE-78	Burettes Glass, Automatic	6
27	DEE-79	Microwave Oven	2
28	DEE-80a	Refrigerator, Small	1
29	DEE-80b	Refrigerator, Large	1
30	DEE-81	pH Meter, Digital	1
31	DEE-82	Freezer	1
32	DEE-83	Sewing Machines Automatic	15
33	DEE-84	Flat Knitting Machines, Automatic	3
34	DEE-86	Cooking Range (Gas)	10

II. GENERAL FACILITIES

Sr.No.	Code No.	Name of Equipment	Qty
32. AUDIO/VIDEO EQUIPMENT FOR LIBRARY			
1	AV-01	Overhead Projector w/Screen	3
2	AV-02	Overhead Projector for Books	1
3	AV-03	Slide Projector	3
4	AV-04	Slide File (for 200 slide)	10
5	AV-11	Slide Copy Stand	1
6	AV-12	35mm Camera	1
7	AV-13	VTR System	1
8	AV-17	Personal Computer with Printer	5
9	AV-19	Photocopier	1
10	AV-20	Copy Printer	1
33. CENTRAL LABORATORY			
1	CL-01	X-Ray Diffractometer	1
2	CL-02	Scanning Electron Microscope	1
3	CL-03	Transmission Electron Microscope	1
4	CL-05	High Performance Liquid Chromatograph	3
5	CL-06	GC Mass Spectrometer	1
6	CL-07	Atomic Absorption Spectrophotometer	1
7	CL-08	Auxiliary Equipment Water Distiller with Deionizer Autoclave Oven Fume Hood with Scrubber Generator Air Conditioning Unit	1 1 1 1 1 1 1
8	CL-09	Amino-Acid Analyzer	1
9	CL-10	Ultra Centrifuge	3
34. IMPROVEMENT OF UNIVERSITY PRESS			
1	UP-01	Offset Machine	1
2	UP-02	Electronic Vertical Camera	1
3	UP-03	Auto Plate Maker Unit	1
4	UP-04	Printing Materials	1
5	UP-05	Book Binding Equipment Cutting Machine Stitching Machine Spring Binding System Lamination Machine Embossing Machine	1 1 1 1 1 1
35. UNIVERSITY CENTRAL REPAIR CELL			
1	RC-01	Oscilloscope, dual channel 60MHz	1
2	RC-02	Frequency Meter	1
3	RC-03	Pattern Generator	1
4	RC-04	Digital Multimeter	1
5	RC-05	Soldering Iron	1
6	RC-06	Micro Soldering Gun	1
7	RC-07	Desoldering Gun	1
8	RC-08	Soldering Bath	1
9	RC-09	Regulated Power Supply, 0-200V DC, AC	1
10	RC-10	IC Tester	1
11	RC-11	EPROM Copier	1
12	RC-12	Soldering Desoldering Station with Spare Tips	1
13	RC-13	Soldering Sucker	1
14	RC-14	Serial Board	1
15	RC-15	Soldering Desoldering Station for Surface Mounted Technology	1
16	RC-16	Clamp Meter	1
17	RC-17	Complete Tool Kit for Computer	1

APPENDIX-8 Layout Plan

A. FACULTY OF AGRICULTURE

Sr.No	Code No.	Name of Equipment	Location	Qty	Sr.No	Code No.	Name of Equipment	Location	Qty
DEANS OFFICE									
1	DA-1	Combine Harvester	(PARS)	1	38	HOR-31	Slide Projector with screen	A-2	1
2	DA-2	Photocopy Machine		1	39	HOR-32	Overhead Projector with screen	A-2	1
I. DEPARTMENT OF CROP PHYSIOLOGY									
1	CP-01	Porometer	A-1-2	1	40	HOR-33	Computer with Printer	A-2	1
2	CP-02	Osmometer	A-1-1	1	41	HOR-35	Sequencing Gel Apparatus and Power Supplies	A-2	1
3	CP-04	Plant Growth Cabinet	A-1-1	1	42	HOR-36	Gelgel Counter	A-2	1
4	CP-05	Microscope	A-1-2	1	43	HOR-37	Growth Chamber	A-2	1
5	CP-06	Oven	A-1-1	1	44	HOR-38	Refractometer with Digital Printer	A-2	1
6	CP-07	Rotary Microtome	A-1-2	1	3. DEPARTMENT OF AGRONOMY				
7	CP-08	Personal Computer with Laser Printer	A-1-1	1	1	AGR-01	Area Root Length Measuring System	A-3-4	1
8	CP-10	Nitrogen Analyzer	A-1-1	1	2	AGR-02a	Drying Oven (Medium)	A-3-2	1
9	CP-11	Polarimeter	A-1-1	1	3	AGR-02b	Drying Oven (Large)	A-3-4	1
10	CP-12	Ceptometer	A-1-2	1	4	AGR-03	CO ₂ /H ₂ O Analyzer	A-3-3	1
11	CP-13	Brix Refractometer	A-1-2	1	5	AGR-04	Infrared Analyzer	A-3-1	1
12	CP-14	Displacement Transducer	A-1-2	1	6	AGR-05a	i) Top Loading Electronic Balance (3200g ± 1g)	A-3-2	1
13	CP-15	Light Meter	A-1-2	5	7	AGR-05b	ii) Digital Top Loading Balance (320g ± 0.01g)	A-3-4	1
14	CP-16	Portable pH and EC Meter	A-1-1	2	8	AGR-05c	iii) Digital Analytical Balance (20g ± 0.1mg)	A-3-1	1
15	CP-17	Electronic Balance	A-1-1	1	9	AGR-06	Water Distillation Apparatus	A-3-2	1
16	CP-18	Camera with Accessories	A-1-2	1	10	AGR-07	Plant Efficiency Analyser	A-3-3	1
17	CP-20	Radiation Thermometer	A-1-1	1	11	AGR-08	Plant Water Potential Apparatus	A-3-1	1
18	CP-21	Chlorophyll Meter	A-1-1	1	12	AGR-10	Personal Computer with Printer	A-3-5	1
2. DEPARTMENT OF HORTICULTURE									
1	HOR-01a	Electrophoresis Apparatus Complete with Gel Set	A-2	3	13	AGR-12	Plant Growth Cabinet	A-3-3	1
2	HOR-01b	Refrigerated Cabinet	A-2	3	14	AGR-13	Chlorophyll Meter	A-3-2	1
3	HOR-02	Digital pH Meter	A-2	1	15	AGR-14	Sample Mill (g/sec)	A-3-2	1
4	HOR-03a	Electronic Analytical Balance (45g ± 0.01mg)	A-2	1	16	AGR-15	Sample Mill (Over 4g/sec)	A-3-4	1
5	HOR-03b	Electronic Analytical Balance (320g ± 0.1mg)	A-2	1	17	AGR-16	Kjeldahl System with Accessories	A-3-2	1
6	HOR-04a	Freezer (-30 deg.)	A-2	1	18	AGR-17	Micro-Centrifuge Machine	A-3-3	1
7	HOR-04b	Freezer (-85 deg.)	A-2	1	19	AGR-18	Porometer	A-3-1	1
8	HOR-05	Refrigerator	A-2	2	20	AGR-19	Soil Moisture Meter & Resistance Blocks for different depths	A-3-2	1
9	HOR-06a	i) Vertical Incubator	A-2	3	21	AGR-20	Moisture-Temperature Meter	A-3-2	2
10	HOR-06b	ii) Orbital shaking Incubator w/shaking plate	A-2	2	22	AGR-21	Grain Moisture Meter	A-3-2	1
11	HOR-07a	(i) Student Dissecting Microscope	A-2	5	23	AGR-22	Grain Counter	A-3-1,2	2
12	HOR-07b	(ii) Epi-Fluorescence Microscope with Camera Attachment	A-2	1	24	AGR-23	Osmometer	A-3-3	1
13	HOR-07c	(iii) Inverted Microscope	A-2	1	25	AGR-24	Digital Conductivity Meter	A-3-4	1
14	HOR-08	Shaking Water Bath with Accessories	A-2	1	26	AGR-25	Tube Solenometer	A-3-4	1
15	HOR-09	High-speed Micro Centrifuge	A-2	1	27	AGR-26	Ceptometer	A-3-1	1
16	HOR-10a	Dispenser (0.5 - 10 micro l)	A-2	1	28	AGR-27	Thermostatic Germinator	A-3-1	1
17	HOR-10b	Dispenser (5 micro l)	A-2	1	29	AGR-28	Air Compressor Unit	A-3-3	2
18	HOR-10c	Dispenser (5ml)	A-2	1	30	AGR-29	Salinity Bridge Measuring Instrument	A-3-3	1
19	HOR-12	Vertical Laminar Airflow (Clean Bench)	A-2	1	31	AGR-30	Muffle Furnace with Crucibles	A-3-2	1
20	HOR-13	Microwave Oven	A-2	1	32	AGR-31	Microspectre (200, 1000, 5000 n l)	A-3-3	1
21	HOR-14	Ultra loki Hand Lamp	A-2	1	33	AGR-32	Digital Burnette	A-3-2	2
22	HOR-15	Water Purifier, Demineralizer	A-2	1	34	AGR-33	Student Stereomicroscope	A-3-3	3
23	HOR-16	Test Tube Mixer	A-2	4	35	AGR-34	Camera with Accessories	A-3-4	1
24	HOR-17	Magnetic Stirrer with Hot Plate	A-2	3	36	AGR-35	Slide Projector with Screen	A-3-5	1
25	HOR-18	Stereoscopic Microscope	A-2	1	37	AGR-36	Overhead Projector with Screen	A-3-5	1
26	HOR-19	Electric Strainer	A-2	1	38	AGR-38	Polarimeter with Accessories	A-3-1	1
27	HOR-20	Orbital Shaker with Shaking Plate	A-2	1	39	AGR-39	Water Bath	A-3-3	1
28	HOR-21a	Vacuum Pump (15 L/min)	A-2	2	40	AGR-40	Digital Colorimeter	A-3-4	1
29	HOR-21b	Vacuum Pump (20 L/min)	A-2	2	41	AGR-41	Hand Refractometer	A-3-1	1
30	HOR-22	Vacuum Drying Oven with vacuum pump	A-2	1	42	AGR-43	Flame Photometer with Air Compressor	A-3-4	1
31	HOR-23	Camera with Accessories	A-2	1	43	AGR-44	Digital pH Meter and Electrode	A-3-4	1
32	HOR-24	Digital Lux meter	A-2	1	4. DEPARTMENT OF FORESTRY, RANGE MANAGEMENT & WILDLIFE				
33	HOR-25	Humidifier	A-2	2	1	FRW-01	Refrigerator	A-4-3	1
34	HOR-26	Heating Blocks for Test Tubes	A-2	2	2	FRW-02	Chain Saw	A-4-1	1
35	HOR-27	Drying Cabinet	A-2	1	3	FRW-04	Soil Sampler	A-4-4	1
36	HOR-29	Autoclave	A-2	1	4	FRW-05	Electronic Balance	A-4-4	1
37	HOR-30	PCR Thermocycler	A-2	1	5	FRW-06	Deep Freezer	A-4-3	1
					6	FRW-07	Electronic Hand Drill	A-4-1	1
					7	FRW-08	Universal Wood Testing Machine	A-4-1	1
					8	FRW-09	Fueller's Staff Compass	A-4-4	1

Sr. No.	Code No.	Name of Equipment	Location	Qty	Sr. No.	Code No.	Name of Equipment	Location	Qty
9	FRW-11	Dissecting Set	A-4-3	1	9	PBG-06	Mechanical Shaker with shaking plate	A-6-1	1
10	FRW-12	Research Microscope	A-4-3	1	10	PBG-07	Horizontal Gel Electrophoresis Unit	A-6-1	1
11	FRW-24	Trolley Mounted Diesel Pump	A-4-1	1	11	PBG-08	Computer with Printer	A-6-1	1
12	FRW-25	Hand-Moved Sprinkler	A-4-1	1	12	PBG-10	Camera with Attachments	A-6-2	1
13	FRW-26	Pesticide Spraying Machine	A-4-1	1	13	PBG-11	Microphotographic Enlarger	A-6-2	1
14	FRW-28	Portable, Petrol Engine Hedge Cutting Machine	A-4-1	1	14	PBG-13	Laboratory Mill for Oilseeds and Grains	A-6-1	1
15	FRW-29	Portable Circular Sizer, Lab. Model	A-4-1	1	15	PBG-14	Digital Soil Tensiometer	A-6-1	2
16	FRW-30	Portable Wood Planer	A-4-1	1	16	PBG-15	Humidigraph	A-6-1	2
17	FRW-33	Portable, Sanding Machine, Electric powered	A-4-1	1	17	PBG-16	Low Temp. Incubator	A-6-1	1
18	FRW-36	Wood Working Hand Tools	A-4-1	1	18	PBG-17	Autoclave	A-6-1	1
19	FRW-37	Personal Computer	A-4-5	1	19	PBG-18	Deep Freezer	A-6-1	1
20	FRW-38	Air Conditioner	A-4-5	1	20	PBG-19a	Dryer (Blower), Large Type	A-6-1	1
21	FRW-40	Light Meter	A-4-4	1	21	PBG-19b	Dryer (Blower), Small Type	A-6-1	1
22	FRW-41	Relative Humidity Meter, Portable Humidigraph	A-4-3	1	22	PBG-20	Seed Sorter and Counter	A-6-1	1
23	FRW-42	Wind Velocity Meter - Anemometer - Portable	A-4-3	1	23	PBG-21	Fluorescent Lamp with Magnifying Lens & UV Cabinet	A-6-1	1
24	FRW-43	Rain Gauges - Simple - Portable	A-4-3	1	24	PBG-22	Thermostatic Germinator	A-6-1	1
25	FRW-44	Electronic Atmosphere Thermometer	A-4-3	1	25	PBG-23	Microscope with Camera Attachment	A-6-2	1
26	FRW-47	Soil Tensiometer	A-4-3	1	26	PBG-24	Water Distillation Apparatus with Deionizer	A-6-1	1
27	FRW-48	Soil Thermometer	A-4-3	1	27	PBG-25	Plant Water Potential Apparatus	A-6-1	1
28	FRW-49	Soil pH Meter	A-4-3	1	28	PBG-26	Digital Grain Moisture Meter	A-6-1	1
29	FRW-51	Electronic Weighing Balance	A-4-4	1	29	PBG-27	Moisture Balance with Printer	A-6-1	1
30	FRW-52	Ablimeter	A-4-1	4	7. DEPARTMENT OF SOIL SCIENCE				
31	FRW-53	Refractometer	A-4-3	1	1	SS-01a	Spectrophotometer Student Type	A-7-3,4,5,6	4
32	FRW-54	Dendrometer	A-4-3	2	2	SS-01b	UV-VIS Spectrophotometer	A-7-6	1
33	FRW-55	Planimeter	A-4-3	2	3	SS-02	Automatic Water Distillation Apparatus	A-7-7	1
34	FRW-55	Video Camera	A-4-5	1	4	SS-03	Flame Photometer	A-7-1,2	4
35	FRW-59	Slide Projector with screen	A-4-5	1	5	SS-04	Portable Digital pH Meter	A-7-1,2,3,4,5,6,10,11	15
36	FRW-60	Overhead Projector	A-4-5	1	6	SS-05	Kjeldahl Analyzer	A-7-6	1
37	FRW-61	Portable Megaphone	A-4-5	1	7	SS-06	Polarizing Microscope	A-7-12	5
38	FRW-62	Photocamera for making slides with stands	A-4-5	1	8	SS-07	Microscope for biological studies	A-7-6	10
39	FRW-63	Water Flow Meter	A-4-3	1	9	SS-08	Soil Colour Chart	A-7-12	5
40	FRW-64	Animal Weighing Scale with platform	A-4-3	1	10	SS-09	Tripod	A-7-12	1
41	FRW-65	Steam Water Sediment Sampler Set	A-4-3	1	11	SS-10	Compass	A-7-12	1
42	FRW-66	Portable Water Measuring Flumes	A-4-3	1	12	SS-11	Alidade	A-7-12	1
43	FRW-68	Telescopic Binocular	A-4-4	2	13	SS-12	Barometer Mercury type	A-7-12	1
44	FRW-69	Blender	A-4-4	1	14	SS-13	Thin Layer Chromatography Apparatus	A-7-6	1
8. DEPARTMENT OF PLANT PATHOLOGY					15	SS-15	Crust Hardness Tester	A-7-10	1
1	PP-01	Horizontal Autoclave	A-5-1	1	16	SS-16a	Dispenser Pipette 10 - 100 micro L	A-7-1	2
2	PP-02	Low Temp. Incubator	A-5-1,2,3,4	4	17	SS-16b	Dispenser Pipette 20 - 200 micro L	A-7-1	2
3	PP-03	Stereoscopic Microscope with Camera Attachment	A-5-1	1	18	SS-16c	Dispenser Pipette 100 - 1000 micro L	A-7-1	2
4	PP-04	Spectrophotometer	A-5-4	1	19	SS-17	Digital Chloride Meter	A-7-1,4,7,11,13	7
5	PP-05	Elisa Plate with Reader	A-5-2	1	20	SS-18	Digital Dissolved Oxygen Meter	A-7-7	1
6	PP-06	Serodia HTV Kit	A-5-2	1	21	SS-19	High Speed Refrigerated Centrifuge	A-7-7	1
7	PP-07	Stand for Dispenser	A-5-2	1	22	SS-20	Stereoscopic Microscope	A-7-1	1
8	PP-08	B-Syringe dispenser	A-5-2	1	23	SS-21	Muffle Furnace	A-7-1,2	2
9	PP-09	Rotary Shaker	A-5-3,4	1	24	SS-22	Top Loading Electronic Balance	A-7-1,2,3,5,6,10,11,13	10
10	PP-10	Automatic Slide Stainer	A-5-1	1	25	SS-23	Ton Analyzer (with different electrodes)	A-7-4,11	2
11	PP-11	Vacuum Filtration System	A-5-3	1	26	SS-24	Portable Digital Conductivity Meter	A-7-1,2,3,4,5,6,10,11,13	10
12	PP-12	Growth Chamber	A-4-5	1	27	SS-25	Centrifugal Automatic Particle Analyzer	A-7-1,2,3	5
13	PP-14	Rotary Evaporator	A-4-5	1	28	SS-26	Overhead Projector with screen	A-7-12	3
14	PP-15	Microscope with Phase Contrast Equipment	A-5-1	1	29	SS-27	Slide Projector with screen	A-7-1	3
15	PP-18	Table Top Centrifuge	A-5-3	1	30	SS-29	Computer with Printer	A-7-1	4
16	PP-19	Computer with Printer	A-5-4	1	31	SS-31	Osmometer	A-7-7	1
9. DEPARTMENT OF PLANT BREEDING AND GENETICS					32	SS-32	Orbital Shaker	A-7-4	1
1	PBG-01	Student Binocular Microscope	A-6-1	5	33	SS-33	Shaking Water Bath	A-7-6	1
2	PBG-02a	i) Electronic Balance 45g ± 0.01mg	A-6-1	1	34	SS-34	Centrifuge Machines (Table type)	A-7-1,3,3,13	6
3	PBG-02b	ii) Electronic Balance 320g ± 0.1mg	A-6-1	1	35	SS-35	Microwave Oven	A-7-6	2
4	PBG-02c	iii) Electronic Balance 430g ± 0.001g	A-6-1	1	36	SS-36	Magnetic Stirrer	A-7-1,2,3,4,5,6,7,11	12
5	PBG-02d	iv) Electronic Balance 4300g ± 0.1g	A-6-1	1	37	SS-37	Ultrasonic Homogenizer	A-7-12	2
6	PBG-02e	v) Electronic Balance 12200g ± 0.1g	A-6-1	1	38	SS-38	Forced Air Oven	A-7-1,13	2
7	PBG-03	FT-IR Spectrophotometer with Accessories	A-6-1	1	39	SS-39	Vacuum Pump	A-7-1,2	2
8	PBG-04	Hand Refractometer	A-6-1	5	40	SS-40	Drying Oven	A-7-4,6,11,13	4

S.No.	Code No.	Name of Equipment	Location	Qty
41	SS-41	Slide Cabinet	A-7-6	1
42	SS-42	Inverted Microscope System	A-7-12	1
43	SS-43	Filter Press	A-7-1,11	2
44	SS-44	Hot Plates	A-7-1,6,13	6
45	SS-45	Ultrasonic Bath	A-7-6	2
46	SS-46	Autoclave (Vertical)	A-7-6	1
47	SS-47	Analytical Balance	A-7-6,11	2
48	SS-48	Clean Bench	A-7-6	1
49	SS-49	Light Meter	A-7-6	1
50	SS-50	Ultra Low Freezer	A-7-6	1
51	SS-51	Growth Chamber	A-7-1	1
52	SS-52	Irrigation Pump with Diesel Engine	A-7-6	2
53	SS-55	Digital Indicating Controller Air Conditioner	A-7-1,2	3
54	SS-57	Freeze Drying Apparatus	A-7-6	1
55	SS-60	Gel Electrophoresis Apparatus	A-7-7	1
56	SS-61	Colony Counter	A-7-6	1
57	SS-62	Point Counter	A-7-6	1
58	SS-64	Camera	A-7-1	1
59	SS-65	Rotary Evaporator	A-7-6	1
60	SS-66	Megaphone	A-7-1	1
B. DEPARTMENT OF AGRICULTURE ENTOMOLOGY				
1	ENT-01	Stereoscopic Zoom Microscope with Camera Attachment	A-8-2	1
2	ENT-02	Student stereomicroscope	A-8-6,7	10
3	ENT-03	Low Temp. Incubator	A-8-4	1
4	ENT-04	Oven	A-8-5	1
5	ENT-05	Drying Cabinet	A-8-4	1
6	ENT-06	Humidifier	A-8-4	2
7	ENT-07	Rotary Microtomes	A-8-3	1
8	ENT-08	Paraffin Bath	A-8-3	2
9	ENT-09	Slide Projector with screen	A-8-7	1
10	ENT-10	Top Loading Electronic Balance	A-8-4	1
11	ENT-11	Analytical Electronic Balance	A-8-3	1
12	ENT-12	Stereomicroscope with Illuminator	A-8-6	10
13	ENT-13	Insect Growth Chamber	A-8-5	1
14	ENT-14	Computer with Printer	A-8-1	1
15	ENT-15a	Entomological Pins, No.16	A-8-3	100
16	ENT-15b	Entomological Pins, No.20	A-8-3	100

B. FACULTY OF AGRICULTURAL ENGINEERING & TECHNOLOGY

Sr.No.	Code No.	Name of Equipment	Location	Qty	Sr.No.	Code No.	Name of Equipment	Location	Qty
DEAN'S OFFICE									
1	DAE-1	Photocopy Machine		1	6	BE-07	Portable Dissolved Oxygen Meter	B-12-1	2
9. DEPARTMENT OF FOOD TECHNOLOGY									
1	FT-01	Digital Balance	B-9-1	2	7	BE-08	Water Quality Checker	B-12-1	2
2	FT-02	Colony Counter	B-9-1	1	8	BE-09	Centrifuge	B-12-1	1
3	FT-03	Rotary Evaporator	B-9-2	1	9	BE-10	Soil Test Kit	B-12-1	2
4	FT-04	Hot Plate	B-9-2	2	10	BE-11	Automatic Soil Moisture Meter	B-12-1	1
5	FT-05	Melting Point Apparatus	B-9-3	1	11	BE-12	E.C. Meter (Sod Salt Meter)	B-12-1	2
6	FT-06	Saxhlet Extraction Unit	B-9-4	1	12	BE-13	Sod Hardness Tester	B-12-1	2
7	FT-07	Ultraviolet Lamp	B-9-1	2	13	BE-14	Field Soil Bulk Density Meter	B-12-1	2
8	FT-08	Lowbend Tintometer (digital readout)	B-9-3	1	14	BE-15	Cone Penetrometer	B-12-1	2
9	FT-11	Slide Projector with screen	B-9-3	1	15	BE-16	Digital Balance	B-12-1	2
10. DEPARTMENT OF IRRIGATION AND DRAINAGE									
1	ID-01	Metacalide Height Apparatus	B-10-2	1	16	BE-17	Chloride Content Meter	B-12-1	2
2	ID-02	Calibration of Pressure Gauge Apparatus	B-10-2	1	17	BE-18	T.D.S. Meter	B-12-1	1
3	ID-03	Osborne Reynolds Demonstration	B-10-2	1	18	BE-20	Refrigerator	B-12-1	1
4	ID-04	Laminar Flow Table, Hele-shaw Model	B-10-2	1	19	BE-21	Airconditioner	B-12-1	1
5	ID-05	Pelton Wheel Turbine Apparatus	B-10-2	1	20	BE-23	Computer with Printer	B-12-1	1
6	ID-06	Apparatus for Bernoulli's Theorem	B-10-2	1	13. DEPARTMENT OF FARM MACHINERY & POWER				
7	ID-07	Viscometer	B-10-2	1	1	FMP-01	Fork Lift	B-13-1	1
8	ID-09	Fluid Friction Loss Apparatus	B-10-2	1	2	FMP-02	Capacitance Transducer	B-13-1	5
9	ID-10	Water Hammer Apparatus/Pressure Surge	B-10-2	1	3	FMP-03	Resistance Transducer	B-13-1	1
10	ID-11	Flow Current Meter	B-10-2	2	4	FMP-05	Bourdon Tube Pressure Gauge	B-13-1	5
11	ID-12	Sediment Samplers	B-10-2	2	5	FMP-06	Oscilloscope	B-13-1	1
12	ID-13	Motorized Direct Shear Apparatus	B-10-1	1	6	FMP-07	Universal Counter	B-13-1	5
13	ID-14	Motorized Liquid Limit Set	B-10-1	4	7	FMP-09	Dead Weight Tester	B-13-1	1
14	ID-15	Plastic & Shrinkage Limit Set	B-10-1	4	8	FMP-10	Diaphragm Gauges	B-13-1	1
15	ID-16	Constant Head Permeameter	B-10-1	2	9	FMP-13	Flowmeter	B-13-1	2
16	ID-17	Falling Head Permeameter	B-10-1	2	10	FMP-15	Magnetic Flowmeter	B-13-1	1
17	ID-18	Hydrometer	B-10-1	2	11	FMP-17	Strain Gauge Sets	B-13-1	1
18	ID-19	ASTM Standard Sieves Set	B-10-1	1			Strain Gauges	B-13-1	10
19	ID-21	Electrical Resistivity Apparatus	B-10-1	1			Dynamic Strain Gauges	B-13-1	10
20	ID-22	Seismograph	B-10-1	1			Strain Amplifier	B-13-1	1
21	ID-23	Sand Box Apparatus	B-10-2	1	12	FMP-18	Oscillographic Recorder	B-13-1	1
22	ID-24	Submersible Pump Unit	B-10-2	1			Vibrometer	B-13-1	1
23	ID-25	Hammer	B-10-2	2	13	FMP-19	Velocity Meter	B-13-1	1
24	ID-26	Working Models of Pumps	B-10-2	1	14	FMP-20	Slip Ring	B-13-1	1
25	ID-27	Digital Balance (battery operated)	B-10-4	2	15	FMP-21	Electronic Balance (3100g x 0.01g)	B-13-1	1
26	ID-28	Speedy Soil Moisture Apparatus	B-10-2	1	16	FMP-22	Electronic Balance (310g x 0.001g)	B-13-1	1
27	ID-29	Soil Moisture Tensiometer	B-10-2	1	17	FMP-23	Digital Multimeter	B-13-1	1
28	ID-30	Pressure Membrane Apparatus with Attachment	B-10-1	1	18	FMP-25	Amplifier	B-13-1	1
29	ID-31	Digital pH/MV Meter, Portable	B-10-4	2					
30	ID-32	Bench type pH Meter	B-10-4	1					
31	ID-33	Digital Conductivity Meter	B-10-4	1					
32	ID-34	Single-Beam Spectrophotometer	B-10-4	1					
33	ID-35	Flame Photometer	B-10-4	1					
34	ID-36	Theodolite	B-10-3	2					
35	ID-37	Laser Aligner	B-10-3	1					
36	ID-38	Overhead Projector	B-10-1	1					
37	ID-39	Computer with Printer	B-10-1	1					
38	ID-40	Centrifugal Portable Pumping Unit	B-10-3	1					
11. DEPARTMENT OF FIBER TECHNOLOGY									
1	FIBT-01	Cotton Fiber Measuring System	B-11-1	1					
12. DEPARTMENT OF BASIC ENGINEERING									
1	BE-01	Universal Tensile and Compressive Testing Machine	B-12-1	1					
2	BE-03	Torsion Spring Testing Apparatus	B-12-1	1					
3	BE-04	Nitrogen Analyzer	B-12-1	1					
4	BE-05	Waste Water Treatment Apparatus	B-12-1	1					
5	BE-06	Portable Digital Turbidity Temperature Meter	B-12-1	1					

C. FACULTY OF BASIC SCIENCES

S.No.	Code No.	Name of Equipment	Location	Qty	S.No.	Code No.	Name of Equipment	Location	Qty
DEAN'S OFFICE									
1	DBS-1	Photocopy Machine		1	4	PHY-04	Regulated Power Supply	C-16-3	4
14. DEPARTMENT OF BOTANY									
1	BO-01	Monocular Microscope	C-14-1	10	5	PHY-05	Digital Multimeter	C-16-3	4
2	BO-02	Student Binocular Microscope	C-14-1	5	6	PHY-06	Electron Spin Resonance System	C-16-3	1
3	BO-03	Microscope with Camera Attachment & Phase Contrast	C-14-1	1	7	PHY-08	Temperature Control Unit	C-16-1	2
4	BO-05	Analytical Electronic Balance	C-14-1	1	8	PHY-10	Digital Frequency Counter	C-16-3	2
5	BO-06	Top Loading Electronic Balance	C-14-1	1	9	PHY-11	Conductivity Meter	C-16-3	1
6	BO-07	EC Meter	C-14-3	1	10	PHY-14	Basic Microwave Optic System	C-16-3	1
7	BO-08	pH Meter, Digital	C-14-3	1	11	PHY-15	Vacuum Pump	C-16-3	1
8	BO-09	Flame Photometer with Air Compressor	C-14-1	1	12	PHY-16	Flux Meter	C-16-3	2
9	BO-10	Plant Growth Chamber	C-14-3	1	13	PHY-17	Power Amplifier	C-15-1	4
10	BO-11	Double Beam UV/VIS Spectrophotometer	C-14-1	1	14	PHY-18	Student Microscope	C-16-3	1
11	BO-12	Electrophoresis Apparatus with Power Supply	C-14-3	1	15	PHY-20	Recoiler	C-15-1	1
12	BO-13	Porometer	C-14-2	1	15	PHY-21	Overhead Projector with Screen	C-16-3	1
13	BO-14	Photosynthesis Measurement System	C-14-2	1	17	PHY-22	Slide Projector with Screen	C-16-3	1
14	BO-15	Centrifuge with Rotor	C-14-2	1	18	PHY-23	Computer with printer	C-15-1	1
15	BO-16	Orbital Shaker with Shaking Plate	C-14-2	1	19	PHY-24	Ultrasonic Cleaner	C-16-3	1
16	BO-17	Kjeldahl System	C-14-2	1	20	PHY-25	Sound Level Meter	C-16-3	2
17	BO-18	Low Temp. Incubator	C-14-1	1	21	PHY-27	Laser Beam Expander	C-16-3	1
18	BO-19	Rotary Shaker with Accessories	C-14-1	1	22	PHY-28	Liquid Nitrogen Cryostat	C-16-3	1
19	BO-20	Forced Convection Constant Temp. Oven	C-14-1	1	23	PHY-30	Platinum Resistance Thermometer	C-16-3	4
20	BO-21	Osmometer	C-14-2	1	24	PHY-31	Cryostat	C-16-3	1
21	BO-22	Dissolved Oxygen-BOD Meter	C-14-1	1	25	PHY-32	Agate Mortar and Pestle	C-16-3	1
22	BO-23	Water Tension Testing Apparatus for plants	C-14-2	1	25	PHY-34	Tube Furnace	C-16-3	1
23	BO-24	Autoclave	C-14-3	1	27	PHY-35	Power Supply	C-16-1	1
24	BO-25	Automatic Chloride Analyser	C-14-2	1	28	PHY-37	Standard Resistors (10, 100, 1000, 10000)	C-16-1	4
15. DEPARTMENT OF ZOOLOGY & FISHERIES									
1	ZF-01	Table-top Centrifuge	C-15-1	1	29	PHY-38	Decade Resistance Box	C-16-1	1
2	ZF-02	Multi Timer	C-15-1	1	30	PHY-40	Power Supply	C-16-3	1
3	ZF-03	Electronic Balance	C-15-1	1	31	PHY-41	Electromagnet	C-16-3	1
4	ZF-04	Typewriter	C-15-1	1	17. DEPARTMENT OF CHEMISTRY				
5	ZF-05	Ribbon, 6 per box	C-15-1	10	1. CHEMISTRY SECTION				
6	ZF-06	Lab. Labels (5m/roll)	C-15-1	20	1	CHM-02	FT-IR Spectrophotometer	C-17-4	1
7	ZF-12	Forced Air Oven	C-15-1	1	2	CHM-03	Gas Chromatograph	C-17-6	1
8	ZF-14	Overhead Projector with Screen	C-15-1	1	3	CHM-04	Double-Beam UV/VIS Spectrophotometer	C-17-6	1
9	ZF-15	Slide Projector with screen	C-15-1	1	4	CHM-06	Water Deionizer	C-17-5	1
10	ZF-16	Blender	C-15-1	1	5	CHM-07	Centrifuge with rotors	C-17-6	2
11	ZF-24	Single-Beam UV/VIS Spectrophotometer	C-15-2	1	6	CHM-08	pH Meter, Digital	C-17-3	2
12	ZF-25	Conductivity Meter, Portable	C-15-2	1	7	CHM-09	Rotary Evaporator	C-17-5	1
13	ZF-27	Dissolved Oxygen Meter	C-15-2	1	8	CHM-10	Muffle Furnace	C-17-3	1
14	ZF-28	Forced Air Oven	C-15-2	1	9	CHM-11	Vacuum Drying Oven with vacuum pump	C-17-4	1
15	ZF-29	S Soxhlet Extraction Unit	C-15-2	1	10	CHM-12	Ion Meter with CO ₂ Electrode	C-17-3	1
16	ZF-31	Muffle Furnace	C-15-2	1	11	CHM-13	Vacuum Pump	C-17-4,5,6	2
17	ZF-33	Constant Temperature Circulator	C-15-2	1	12	CHM-15	Flame Photometer	C-17-6	1
18	ZF-34	Electronic Balance	C-15-2	1	2. BIOCHEMISTRY SECTION				
19	ZF-35a	Dispenser 0.2 - 1.0ml	C-15-1	1	13	CHM-16	UV/VIS Spectrophotometer	C-17-2,8	2
20	ZF-35b	Dispenser 0.4 - 2.0ml	C-15-1	1	14	CHM-17	High Speed Refrigerated Centrifuge w/rotors	C-17-7	1
21	ZF-35c	Dispenser 1.0 - 5.0ml	C-15-1	1	15	CHM-18	Low Speed Centrifuge, Table-top	C-17-8	1
22	ZF-35d	Dispenser 2.0 - 10.0ml	C-15-1	1	16	CHM-19	Microscope with Camera Attachment and Accessories	C-17-2	1
23	ZF-35e	Dispenser 5.0 - 30.0ml	C-15-1	1	17	CHM-20	Incubator	C-17-8	1
24	ZF-36	Hot Plate with stirrer	C-15-2	1	18	CHM-21	Freezer	C-17-7	1
25	ZF-37	Stemoscopic Zoom Microscope	C-15-1	1	19	CHM-22	Fermenter for microorganism	C-17-8	1
26	ZF-38	Multi-Function Analytical Balance	C-15-1	1	20	CHM-23	Water Distillation Apparatus	C-17-2	1
27	ZF-39	Slide Cabinet	C-15-1	1	21	CHM-24	Vertical Laminar Air Flow Clean Bench type	C-17-7	1
28	ZF-41	Electrophoresis Equipment	C-15-1	1	22	CHM-25	Autoclave	C-17-8	1
16. DEPARTMENT OF PHYSICS									
1	PHY-01	Oscilloscope 20MHz/Dualtrace	C-16-3	2	23	CHM-26a	Variable Volume Pipeters 0.5 - 10 μ L	C-17-2	2
2	PHY-02	Function Generator	C-16-3	2	24	CHM-26b	Variable Volume Pipeters 2 - 20 μ L	C-17-2	2
3	PHY-03	Frequency Counter	C-16-3	3	25	CHM-26c	Variable Volume Pipeters 10 - 100 μ L	C-17-2	2
					26	CHM-26d	Variable Volume Pipeters 20 - 200 μ L	C-17-2	2
					27	CHM-26e	Variable Volume Pipeters 100 - 1000 μ L	C-17-2	2
					3. HUMAN ENVIRONMENTAL SECTION				
					28	CHM-27	High Volume Air Sampler with Air Filters	C-17-1	1

Sr No.	Code No.	Name of Equipment	Location	Qty
29	CHM-28	BOD & COD Analyzer	C-17-1	1
31	CHM-29	Chemical Testing Equipment	C-17-1	1
32	CHM-30	Pollution Monitoring Station	C-17-1	1
33	CHM-31	Water Quality Checker	C-17-1	1
18. Dept. of Math & Statistics				
1	COM-01a	Computer	C-30-1	2
2	COM-01b	Computer for Students	C-30-1	8
3	COM-02	Printer	C-30-1	6

D. FACULTY OF ANIMAL HUSBANDRY

Sl.No.	Code No.	Name of Equipment	Location	Qty	Sl.No.	Code No.	Name of Equipment	Location	Qty
DEAN'S OFFICE									
1	DAH-01	Copying Machine		1	51	LMD-54b	Personal Computer with Printer	D-19-2	1
2	DAH-02	Video Camera		1	52	LMD-55	Ice-cube Machine	D-19-2	1
19. DEPARTMENT OF LIVESTOCK MANAGEMENT					3. LIVESTOCK FARM				
1. WOOL LAB.									
1	LMW-01	Wool Finess Meter with Air Compressor	D-19-1	1	53	LML-02	Drenching Gun	D-19-3	2
2	LMW-03	Fibre Tenile Strength Tester	D-19-1	1	54	LML-03	Electric Dehorner	D-19-3	2
3	LMW-06	Trash Separator	D-19-1	1	55	LML-04	Electric Shearing Machine	D-19-3	2
4	LMW-09	Staple Diagram Apparatus	D-19-1	1	56	LML-05	Electric Precision Thermo-Hydro Barograph	D-19-3	1
2. DAIRY LAB.									
1	LMD-01	Fibermatic Analyzer	D-19-2	1	57	LML-06	Livestock Scale with dial and platform	D-19-3	1
2	LMD-02	Animal Gauge	D-19-2	2	58	LML-07	Dipping Tanks/Vats	D-19-3	1
3	LMD-03	Artificial Insemination Instrument Set	D-19-2	1	59	LML-08	Tattooing Apparatus	D-19-3	1
4	LMD-04	Artificial Respiration Apparatus	D-19-2	1	20. DEPARTMENT OF ANIMAL BREEDING AND GENETICS				
5	LMD-05	Automatic Syringe	D-19-2	2	1. CYTOGENETICS LAB (CRL)				
6	LMD-06	Blood Taking Loop	D-19-2	2	1	CRL-01	Electronic Top Loading Balance	D-20-2	1
7	LMD-07	Bull Holder	D-19-2	1	2	CRL-03	Touch Mixer with replacement foam pads	D-20-2	1
8	LMD-08	Bull Ring	D-19-2	2	3	CRL-05	Countdown Alarm Timer	D-20-2	1
9	LMD-09	Bull Ring Pliers	D-19-2	1	4	CRL-06a	Dispenser/Pipette 0.5 - 10 µL	D-20-2	1
10	LMD-10	Butter Fat Test Set	D-19-2	1	5	CRL-06b	Dispenser/Pipette 2 - 20 µL	D-20-2	1
11	LMD-11	Chemical Balance	D-19-2	1	6	CRL-06c	Dispenser/Pipette 10 - 100 µL	D-20-2	1
12	LMD-12	Chronometer	D-19-2	1	7	CRL-06d	Dispenser/Pipette 20 - 200 µL	D-20-2	1
13	LMD-13	Cow Lift	D-19-2	2	8	CRL-06e	Dispenser/Pipette 100 - 1000 µL	D-20-2	1
14	LMD-14	Cow Model	D-19-2	1	9	CRL-06f	Disposable Tips for Each Pipette	D-20-2	1
15	LMD-15	Dehorning Set	D-19-2	2	10	CRL-07	Autoclave	D-20-2	1
16	LMD-17	EPO Counting Plate	D-19-2	1	11	CRL-08	Water Distillation Apparatus	D-20-2	1
17	LMD-18	Estrus Tester	D-19-2	1	12	CRL-11	Biological Safety Cabinet	D-20-2	1
18	LMD-19	Heat Mount Detector	D-19-2	1	13	CRL-12	Liquid Media/Reagent Filtration Kit	D-20-2	1
19	LMD-20	Hoof Examination Instrument	D-19-2	1	14	CRL-13	Filter Device for sterilizing filtration	D-20-2	4
20	LMD-21	Hoof Scraping Instruments	D-19-2	1	15	CRL-16	Syringe Filter	D-20-2	1
21	LMD-22	Horse Gauge	D-19-2	2	16	CRL-18	Audio Visual Equipment	D-20-2	1
22	LMD-24	Kjeldahl Method Nitrogen/Protein Analyzer	D-19-2	1	2. DATA PROCESSING LABORATORY (DPL)				
23	LMD-25	Lactometer	D-19-2	10	1	DPL-09	Computer with Printer	D-20-2	1
24	LMD-26	Long Gloves	D-19-2	6	3. CATTLE CROSS BREEDING PROJECT (CCP)				
25	LMD-27	Mammary Net	D-19-2	2	1	CCP-01	Livestock Weighing Scale	D-20-2	1
26	LMD-28	Mastitis & Abnormal Milk Test Set	D-19-2	1	2	CCP-02	Tattooing Apparatus	D-20-2	2
27	LMD-29	Mincer-Grinder	D-19-2	1	3	CCP-05	Portable Milking Machine	D-20-2	1
28	LMD-30	Meat Saws	D-19-2	2	4	CCP-06	Mobile Sprayer	D-20-2	1
29	LMD-31	Metallic Syringe	D-19-2	6	4. ARTIFICIAL INSEMINATION/SEMEN PROCESSING UNIT (AIPU)				
30	LMD-32	Milk Bacteria Tester	D-19-2	1	1	AIPU-01	Microscope	D-2-1	1
31	LMD-33	Milk Testing Equipment	D-19-2	1	2	AIPU-02	General Purpose Refrigerator	D-2-1	1
32	LMD-34	Milking Machine Model	D-19-2	1	3	AIPU-03	Incubator	D-2-1	1
33	LMD-35	Mouth Gauge	D-19-2	1	4	AIPU-04	Water Bath Thermostatic Control	D-2-1	1
34	LMD-36	Non-Kick Clamp	D-19-2	3	5	AIPU-06	Air Conditioner Split Unit	D-2-1	1
35	LMD-37	Nose Twitch	D-19-2	4	6	AIPU-07	Artificial Vagina	D-2-1	10
36	LMD-38	Pelvis Meter	D-19-2	2	7	AIPU-08	Liquid Nitrogen Container	D-2-1	1
37	LMD-39	Portable Digital pH Meter	D-19-2	1	8	AIPU-09	U.V. Equipment for sterilization	D-2-1	1
38	LMD-40	Post Mortem Meat Inspection Tool Set	D-19-2	1	9	AIPU-10	Dial Thermometer	D-2-1	6
39	LMD-41	Pregnancy Detector for Cow	D-19-2	1	21. DEPARTMENT OF ANIMAL NUTRITION				
40	LMD-44	Sperm Examination Plate	D-19-2	1	1	AN-01	Gas Chromatograph	D-21-5	1
41	LMD-45	Sperm Counter, Thomas's	D-19-2	1	2	AN-02	Grain Tester	D-21-2	1
42	LMD-46	Yanling Scale	D-19-2	1	3	AN-03	Shaker	D-21-3	1
43	LMD-47	Strip Cup	D-19-2	4	4	AN-04	Epi-Fluorescence Microscope	D-21-3	1
44	LMD-48	Syringe	D-19-2	3	5	AN-05	Film Evaporator	D-21-4	1
45	LMD-49	Toe Band, 3 pcs/set	D-19-2	2	6	AN-06	Fluorescence Spectrophotometer	D-21-5	1
46	LMD-50	Refrigerated Centrifuge	D-19-2	1	7	AN-07	Fibertech	D-21-1	1
47	LMD-51	Vaginal Flushing Canula	D-19-2	1	8	AN-08	Grinding Mill	D-21-1	1
48	LMD-52	Water Distillation Apparatus	D-19-2	1	9	AN-09	Fermenter (7L)	D-21-3	1
49	LMD-53	Weighing Tapes	D-19-2	6	22. DEPARTMENT OF POULTRY HUSBANDRY				
50	LMD-54a	Audio Visual Equipment	D-19-2	1	1. HARDWARE FOR PERSONAL COMPUTER				
					1. PH-01 Computer with Printer D-22-1 1				
					2. GRADUATE STUDENTS LAB.				
					2. PH-09a Electronic Balance, Analytical D-22-1 1				

Sr.No.	Code No.	Name of Equipment	Location	Qty
3	PH-08b	Electronic Balance, Top-loading	D-22-1	1
4	PH-09	Student Microscope	D-22-1	2
5	PH-10	Audio Visual Apparatus	D-22-1	1
6	PH-11	Magnetic Stirrer (Hot Plate)	D-22-1	1
7	PH-12	Egg Incubator Set	D-22-2	1
		Incubator		1
		Egg Shell Thickness Meter		1
		Egg Meter		1
		Egg Quality Exam. Stand		1
		Egg Testing Equipment		1
8	PH-13	Centrifuge with rotor	D-22-1	1
9	PH-14	Centrifuge Tubes	D-22-1	1
10	PH-15	Water Distillation Apparatus	D-22-1	1
11	PH-16	Water Bath	D-22-1	1
12	PH-17	Furnace	D-22-1	1
3 POULTRY RESEARCH CENTRE				
13	PH-18	Deep Freezers	D-22-2	1
14	PH-22	Incubator	D-22-2	1
15	PH-23	Automatic Drinking Units	D-22-2	1
16	PH-24	Automatic Tube Feeders Units	D-22-2	1
17	PH-25	Triple Beam Balance	D-22-2	1
18	PH-26	Spring Balance	D-22-2	1
19	PH-27	Power Sprayer	D-22-2	1
20	PH-28	Single-Beam UV/VIS Spectrophotometer	D-22-1	1

E. FACULTY OF VETERINARY SCIENCE

Sr.No.	Code No.	Name of Equipment	Location	Qty	Sr.No.	Code No.	Name of Equipment	Location	Qty
DEAN'S OFFICE									
1	DVS-1	Photocopy Machine		1	13	VPR-11	Deep Freezer	E-25	1
23. DEPARTMENT OF VETERINARY ANATOMY									
1	VA-01	pH Meter Digital Portable with battery	E-23	1	14	VPR-12	Electroblotter with accessories	E-25	1
2	VA-02	Student Binocular Microscope	E-23	6	15	VPR-13	Mini-gel Electrophoresis Apparatus	E-25	1
3	VA-03	Research Microscope with Camera Attachment	E-23	1	16	VPR-14	Top Loading Balance	E-25	1
4	VA-04	Epidiascope	E-23	1	17	VPR-15	Laminar Flow Cabinet, Vertical type	E-25	1
5	VA-05	Epidiascope Bulbs	E-23	12	18	VPR-16	Computer with Printer	E-25	1
6	VA-06	Vacuum Oven	E-23	1	19	VPR-17	Microwave Oven	E-25	1
7	VA-07	Air & Vacuum Pump	E-23	1	20	VPR-18	Student Microscope	E-25	10
8	VA-08	Slide Projector with Screen	E-23	1	21	VPR-19	Slide Projector with Screen	E-25	1
9	VA-09	Cryostat with Accessories	E-23	1	26. DEPARTMENT OF CLINICAL MEDICINE AND SURGERY				
10	VA-10	Hot Plate & Stirrer	E-23	1	1	CMS-01	Portable Ultrasound Diagnostic System	E-26-1	1
11	VA-11	Weighing Balance, Electric	E-23	1	2	CMS-02	Double-Beam UV/VIS Spectrophotometer	E-26-1	1
24. DEPARTMENT OF VETERINARY PATHOLOGY									
1	VP-01	Research Microscope with Camera Attachment	E-24	1	3	CMS-03	Metal Detector (for diagnosis of nails in animals)	E-26-1	1
2	VP-02a	Binocular Microscope	E-24	5	4	CMS-04	pH Meter, Digital	E-26-1	1
3	VP-02b	Microscope, Built-in Photomicroscope System	E-24	1	5	CMS-05	Laminar flow Cabinet	E-26-1	1
4	VP-03	Overhead Projector with Screen	E-24	1	6	CMS-06	Research Microscope	E-26-1	1
5	VP-04	Electric Incubator	E-24	1	7	CMS-07	Electrophoresis Unit with power supply	E-26-1	1
6	VP-05a	i) Micropipettes 0.5 - 10 micro L	E-24	1	8	CMS-08	Transilluminator with polaroid camera	E-26-1	1
7	VP-05b	ii) Micropipettes 10 - 100 micro L	E-24	1	9	CMS-09	Hand Held Air Flow Meter (Vane type)	E-26-1	1
8	VP-05c	iii) Micropipettes 100 - 1000 micro L	E-24	1	10	CMS-10	Dual Channel Vacuum Recorder	E-26-3	1
9	VP-05d	iv) Micropipettes 1000 - 5000 micro L	E-24	1	11	CMS-11	Autoclave	E-26-1	1
10	VP-06a	Dispenser with 1 bottle	E-24	1	12	CMS-12	Vortex Mixer	E-26-1	1
11	VP-06b	Dispenser with 2 bottles	E-24	1	13	CMS-13	Centrifuge, small type	E-26-1	1
12	VP-07	pH Meter, Digital	E-24	1	14	CMS-14	Large Animal (Hydraulic Lift) Operation Table	E-26-2	1
13	VP-10	Hand Refractometer	E-24	5	15	CMS-15	X-Ray Processing Unit	E-26-1	1
14	VP-11	Clinical Refractometer	E-24	2	16	CMS-16	X-Ray Curtain	E-26-1	1
15	VP-12	Homogenizer	E-24	1	27. DEPARTMENT OF ANIMAL REPRODUCTION				
16	VP-13	Hot Plate with Magnetic Stirrer	E-24	1	1	AR-01	Binocular Microscope for students	E-27	1
17	VP-14	Single-Beam UV/VIS Spectrophotometer	E-24	1	2	AR-02	Research Microscope	E-27	1
18	VP-15	Double-Beam UV/VIS Spectrophotometer	E-24	1	3	AR-03	Inverted Microscope	E-27	1
19	VP-16	Blood Cell Counter	E-24	1	4	AR-04	Stereomicroscope w/photographic attachment	E-27	1
20	VP-17	Hemoglobinometer	E-24	1	5	AR-05	High Speed Micro Centrifuge, Refrigerated	E-27	1
21	VP-18	Rotary Microtome with Disposable Knives	E-24	1	6	AR-06	Top Loading Balance	E-27	1
22	VP-20	Tissue Embedding System	E-24	1	7	AR-07	Analytical Balance	E-27	1
23	VP-21	Autopsy Tables for large animals	E-24	1	8	AR-08	Low Temp. Incubator	E-27	1
24	VP-22	Autopsy Tables for small animals	E-24	1	9	AR-09	Hot Plate Magnetic Stirrer	E-27	1
25	VP-23a	Electric Saw for Autopsy (200mm blade)	E-24	1	10	AR-10	Double-Beam UV/VIS Spectrophotometer	E-27	1
26	VP-23b	Electric Saw for Autopsy (400mm blade)	E-24	1	11	AR-11	Glucometer	E-27	1
27	VP-24	Autopsy Set for large animals	E-24	1	12	AR-12	Ultrasound Scanner with Transducer & Printer	E-27	1
28	VP-25	Slide Projector with Screen	E-24	1	28. DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY				
29	VP-26	ELISA Reader Complete Set	E-24	1	1	PPH-01	Automatic Analyzer for Lab.	E-28-2	1
30	VP-27	All Glass Distillery Apparatus	E-24	3	2	PPH-02	Gamma Counter	E-28-2	1
31	VP-28	Laminar Flow	E-24	1	3	PPH-03	Automatic Pipettes Sets 20-1000 micro L	E-28-2	1
32	VP-30	Compact Balance	E-24	1	4	PPH-04	Students Microscope	E-28-4	10
25. DEPARTMENT OF VETERINARY PARASITOLOGY									
1	VPR-01	Sonicator	E-25	1	5	PPH-05	Double-Beam UV/VIS Spectrophotometer	E-28-4	1
2	VPR-02	Ultra Homogenizer	E-25	1	6	PPH-06	Single Channel Physiological Recorder	E-28-4	1
3	VPR-03a	12-channel Micropipettes, 5 - 50 micro L	E-25	1	7	PPH-07	Chamber for Langendorff Preparation	E-28-1	1
4	VPR-03b	12-channel Micropipettes, 40 - 200 micro L	E-25	1	29. DEPARTMENT OF VETERINARY MICROBIOLOGY				
5	VPR-04a	Single Channel Micropipettes, 75 micro L	E-25	1	1	VM-01a	Mini-gel Electrophoresis Apparatus	E-29	1
6	VPR-04b	Single Channel Micropipettes, 100 micro L	E-25	1	2	VM-01b	Electroblotter	E-29	1
7	VPR-05	CO ₂ Incubator	E-25	1	3	VM-02	Ultraviolet Viewing Cabinet	E-29	1
8	VPR-06	pH Meter, Digital	E-25	1	4	VM-03	Water Bath with circulator	E-29	1
9	VPR-07	Double-Beam UV/VIS Spectrophotometer	E-25	1	5	VM-04a	i) Multichannel Pipettes 4-channel	E-29	1
10	VPR-08	Inverted Microscope	E-25	1	6	VM-04b	ii) Multichannel Pipettes 8-channel	E-29	1
11	VPR-09	ELISA Reader	E-25	1	7	VM-04c	iii) Multichannel Pipettes 12-channel	E-29	1
12	VPR-10	Refrigerator	E-25	1	8	VM-04d	iv) Multichannel Pipettes Tips	E-29	1
					9	VM-05a	i) High Speed Micro Centrifuge	E-29	1
					10	VM-05b	ii) Lab. Centrifuge	E-29	1
					11	VM-06a	i) Incubator	E-29	1
					12	VM-06b	ii) Ftg. Incubator	E-29	1

Sl. No.	Code No.	Name of Equipment	Location	Qty
13	VM-06c	iii) Battery Brooder	E-29	1
14	VM-06d	iv) Hot Air Oven	E-29	1
15	VM-07a	Liquid Nitrogen Container (3.6L)	E-29	1
16	VM-07b	Liquid Nitrogen Container (50L)	E-29	1
17	VM-08	Refractometer (Handheld type)	E-29	1
18	VM-09	Test Tube Shaker	E-29	2
19	VM-10	Flask Shaker	E-29	1
20	VM-11a	Micro Pipette 20 micro L with 5,000 Tips	E-29	2
21	VM-11b	Micro Pipette 200 micro L with 5,000 Tips	E-29	2
22	VM-11c	Micro Pipette 1000 micro L with 5,000 Tips	E-29	1
23	VM-12	Dry Ice-making Machine with CO ₂ Cylinder	E-29	1
24	VM-13	Single-Beam UV/VIS Spectrophotometer	E-29	1
25	VM-14	Electrophoresis Gel Elutor	E-29	1
26	VM-15	Gel Drying System	E-29	1
27	VM-16	96-wells Dotblot Manifold	E-29	1
28	VM-17a	i) Binocular research microscope	E-29	1
29	VM-17b	ii) Binocular microscope	E-29	5
30	VM-18	Autoclave Vertical	E-29	1
31	VM-19	Magnetic Stirrer	E-29	2
32	VM-20a	pH Meter (Digital), Lab. Type	E-29	2
33	VM-20b	pH Meter (Digital), Portable	E-29	1
34	VM-21	Slide Projector with screen	E-29	1
35	VM-22	Overhead Projector from Book (Epidiascope) with Screen	E-29	1
36	VM-23	Water Distillation Apparatus	E-29	1
37	VM-24	Motorised Diluters	E-29	2
38	VM-25	Auto Pipettors	E-29	2
39	VM-26	Vacuum/Pressure Pump	E-29	2
40	VM-27	Filter Assembly	E-29	4

F. COLLEGE OF VETERINARY SCIENCE, LAHORE

S.No.	Code No.	Name of Equipment	Location	Qty	S.No.	Code No.	Name of Equipment	Location	Qty
30. VARIOUS DEPARTMENT OF COLLEGE OF VET. SCIENCES, LAHORE									
1	CVS-01	Student Microscope	F-30-1,2,3,4,8,10	20	60	CVS-69	X-Ray (500mA)	F-30-5	1
2	CVS-02	Livestock Scale	F-30-8	1	61	CVS-70	Anesthesia Machine	F-30-5	1
3	CVS-03	Model of Eyeball	F-30-11	3	62	CVS-71	Photocopier	Admin.	1
4	CVS-04	Model of Cow	F-30-11	1	63	CVS-72	Computer with Printer	Admin.	2
5	CVS-05	Male Muscle Figure	F-30-11	1	64	CVS-73	Overhead Projector with Screen	Admin.	1
6	CVS-07	Vacuum Pump	F-30-11	1	65	CVS-74	Slide Projector with Screen	Admin.	1
7	CVS-08	Flame Photometer	F-30-11	2					
8	CVS-09	Autoclave	F-30-1	1					
9	CVS-10	Pipet Washer	F-30-1	2					
10	CVS-11	Water Distillation Apparatus	F-30-1	1					
11	CVS-12	Cellulose Acetate Electrophoresis Apparatus	F-30-1	1					
12	CVS-13	Gas Chromatograph	F-30-8	1					
13	CVS-15	Atomic Absorption Spectrophotometer	F-30-2	1					
14	CVS-16	Sledge Microtome	F-30-5	1					
15	CVS-17	Microscope	F-30-1	1					
16	CVS-18	Cryostat Microtome	F-30-8	1					
17	CVS-19	Ice Maker	F-30-1	1					
18	CVS-20	Electronic Balance	F-30-1,2,8	3					
19	CVS-21	Magnetic Stirrer	F-30-1,2,8	3					
20	CVS-22	Shaker with shaking plate	F-30-1	1					
21	CVS-23	High-speed Refrigerated Centrifuge	F-30-1	1					
22	CVS-24	Homogenizer with Generator	F-30-1	1					
23	CVS-25	Fume Hood	F-30-8	1					
24	CVS-26	Thin Layer Chromatography Apparatus	F-30-1	1					
25	CVS-27	Fraction Collector	F-30-1	1					
26	CVS-28	Crude Fiber Apparatus	F-30-8	1					
27	CVS-29	Infrared Moisture Meter	F-30-8	1					
28	CVS-30	pH Meter, Digital	F-30-1,2,3,4,8	5					
29	CVS-31	Particle Analyser	F-30-8	1					
30	CVS-32	Double-Beam UV/VIS Spectrophotometer	F-30-2	1					
31	CVS-34	Small Rotary Microtome	F-30-10	1					
32	CVS-35	CO ₂ Incubator	F-30-1	1					
33	CVS-36	Inverted Microscope	F-30-1	1					
34	CVS-37	Water Bath	F-30-1	2					
35	CVS-39	Roller Tube Culture Incubator	F-30-1	1					
36	CVS-41	Compet	F-30-1	1					
37	CVS-42	Illuminated Incubator	F-30-1	1					
38	CVS-43	Programmable Bath	F-30-1	2					
39	CVS-44	Convection Oven	F-30-6	1					
40	CVS-45	Micropipette	F-30-6	4					
41	CVS-46	Turbidimeter	F-30-6	1					
42	CVS-48	Egg Incubator	F-30-11	1					
43	CVS-49	Rotary Vacuum Evaporator	F-30-1	1					
44	CVS-50	Fluorescence Spectrophotometer	F-30-6	1					
45	CVS-51	Vacuum Oven with vacuum pump	F-30-1	1					
46	CVS-53	Metabolic Maxometer	F-30-6	1					
47	CVS-54	Stereoscopic Microscope	F-30-6	5					
48	CVS-55	Bio Mixer	F-30-6	1					
49	CVS-56	Metal Cage	F-30-1,2,3,4,8	30					
50	CVS-57	Homogenizer	F-30-1	1					
51	CVS-58	Incubator	F-30-6	1					
52	CVS-59	Forceps	F-30-5	2					
53	CVS-60	Operating Table for Small Animals	F-30-5	1					
54	CVS-61	Dissection Table	F-30-4	4					
55	CVS-62	Horizontal Laminar Airflow Type Clean Bench	F-30-1	1					
56	CVS-63	Micro Kjeldahl Digestion Apparatus	F-30-8	1					
57	CVS-64	Low Temp. Incubator	F-30-1	1					
58	CVS-65	Large Volume Refrigerated Centrifuge	F-30-1	1					
59	CVS-67	Platform Scale	F-30-8	1					

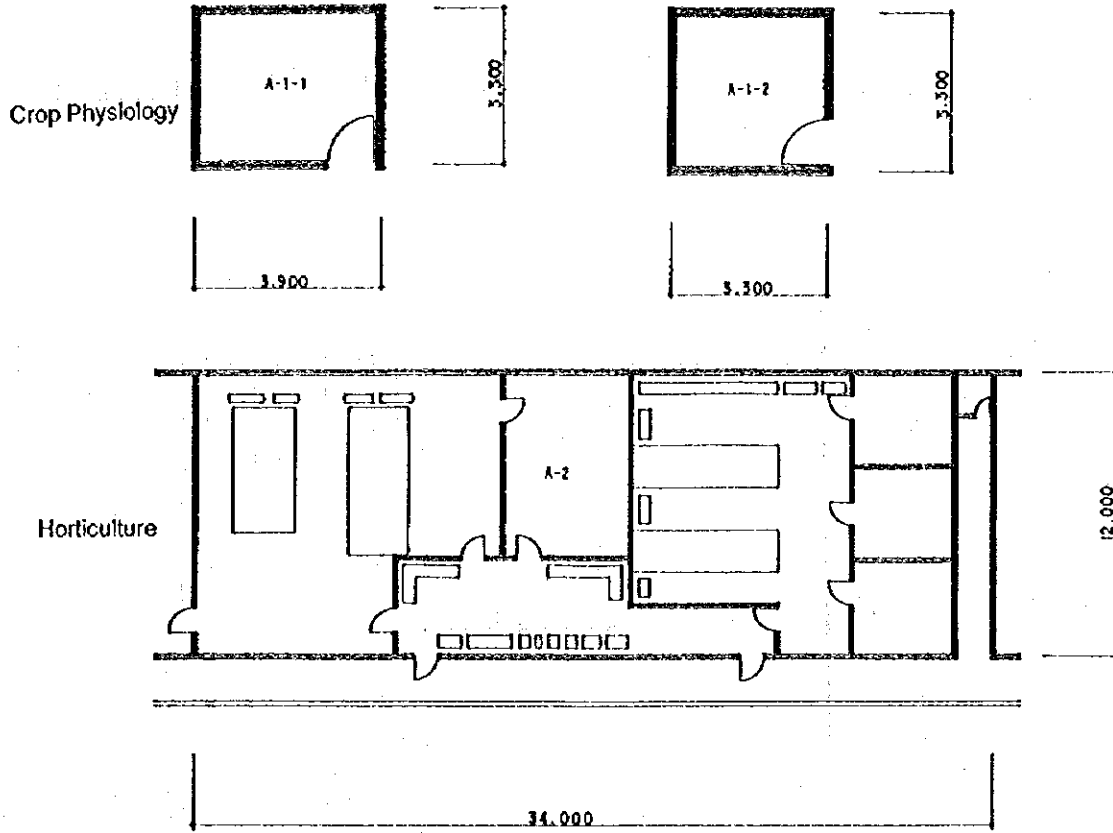
G. DIRECTORATE OF AGRI. EDUCATION & EXTENSION

Sr.No.	Code No.	Name of Equipment	Location	Qty
31. VARIOUS DEPARTMENTS OF DIVISION OF EDUCATION & EXTENSION				
1	DEE-01	Video Camera, VHS	G-31-4	1
2	DEE-04	VCR with Remote Control	G-31-4	1
3	DEE-11	Color TV, 29"	G-31-4	1
4	DEE-29	Portable Tape Recorder	G-31-5	1
5	DEE-33	Megaphone	G-31-5	2
6	DEE-42	Over Head Projector with Screen	G-31-5	4
7	DEE-43	Slide Projector with Screen	G-31-5	2
8	DEE-48	Camera 35mm	G-31-6	1
9	DEE-51	Flash Gun Heavy Duty	G-31-6	1
10	DEE-54	Micro Lens, 55 (1:2.8)	G-31-6	1
11	DEE-55	Telezoom Lens	G-31-6	1
12	DEE-56	Wide Angle Lens	G-31-6	1
13	DEE-57	Camera Stand	G-31-6	1
14	DEE-63	Computer with Printer	G-31-4	1
15	DEE-64	Photo copier	G-31-4	1
16	DEE-67	Top Loading balance	G-31-1	1
17	DEE-68	Forced Air Oven	G-31-2	1
18	DEE-69	Muffle Furnace	G-31-1	1
19	DEE-70	Sorbels Apparatus	G-31-1	1
20	DEE-71	Micro Kjeldahl Digestion & Distillation Assembly (Small)	G-31-1,2	1
21	DEE-73	Bomb Calorimeter	G-31-2	1
22	DEE-74	Centrifuge	G-31-2	1
23	DEE-75	Water Bath	G-31-1	1
24	DEE-76	Single-Beam UV/VIS Spectrophotometer	G-31-2	1
25	DEE-77	Flame Photometer with Air Compressor	G-31-2	1
26	DEE-78	Burettes Glass, Automatic	G-31-1	6
27	DEE-79	Microwave Oven	G-31-2	2
28	DEE-80a	Refrigerator, Small	G-31-2	1
29	DEE-80b	Refrigerator, Large	G-31-2	1
30	DEE-81	pH Meter, Digital	G-31-1	1
31	DEE-82	Deep Freezer	G-31-2	1
32	DEE-83	Sewing Machine Automatic	G-31-3	15
33	DEE-84	Flat Knitting Machines, Automatic	G-31-3	3
34	DEE-86	Cooking Range (Gas)	G-31-2	10

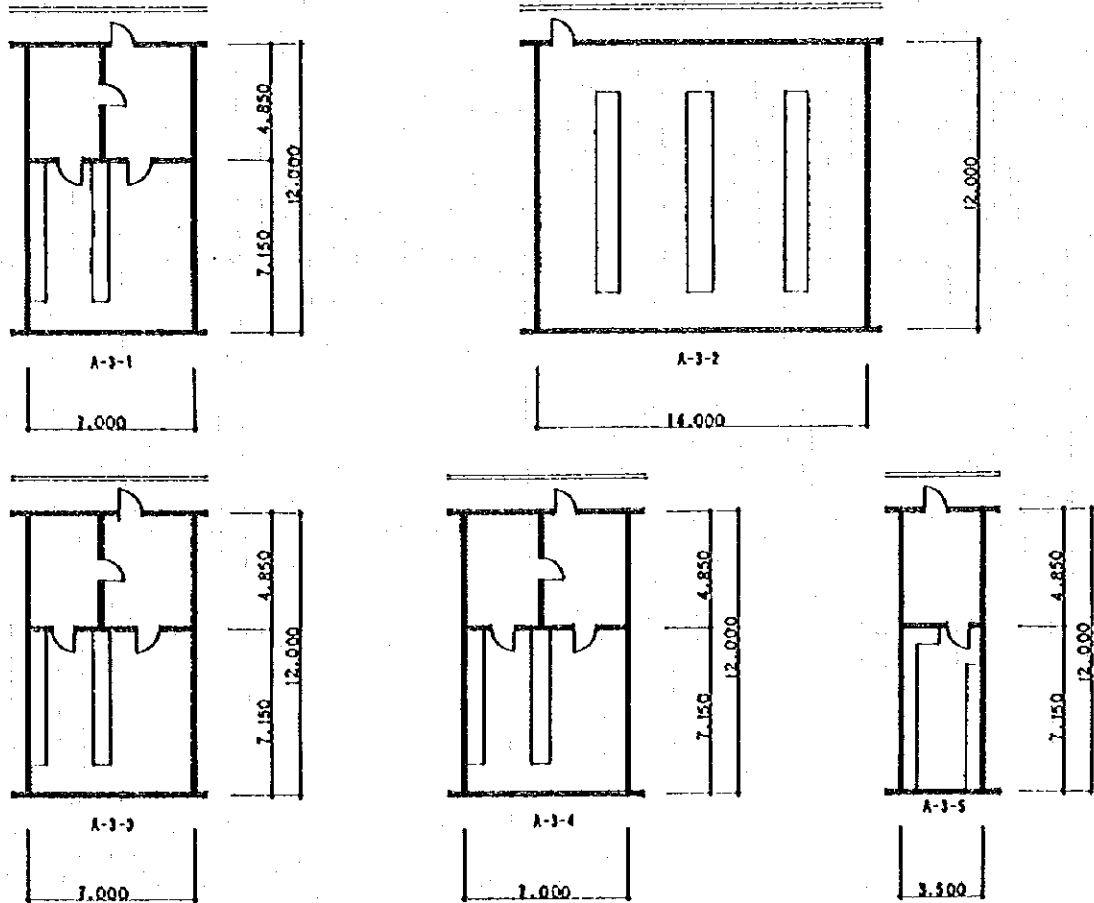
H. GENERAL FACILITIES

Sr.No.	Code No.	Name of Equipment	Location	Qty
32. AUDIO/VIDEO EQUIPMENT FOR LIBRARY				
1	AV-01	Overhead Projector w/Screen	Library	3
2	AV-02	Overhead Projector for Books	Library	1
3	AV-03	Slide Projector	Library	3
4	AV-04	Slide File (for 200 slide)	Library	10
5	AV-11	Slide Copy Stand	Library	1
6	AV-12	35mm Camera	Library	1
7	AV-13	VIR System	Library	1
8	AV-17	Personal Computers with Printer	Library	5
9	AV-19	Photo copier	Library	1
10	AV-20	Copy Printer	Library	1
33. CENTRAL LABORATORY				
1	CL-01	X-Ray Diffractometer	H-33	1
2	CL-02	Scanning Electron Microscope	H-33	1
3	CL-03	Transmission Electron Microscope	H-33	1
4	CL-05	High Performance Liquid Chromatograph	H-33	3
5	CL-06	GC Mass Spectrometer	H-33	1
6	CL-07	Atomic Absorption Spectrophotometer	H-33	1
7	CL-08	Auxiliary Equipment	H-33	1
		Water Distiller with Defolizer	H-33	1
		Autoclave	H-33	1
		Oven	H-33	1
		Fume Hood with Scrubber	H-33	1
		Generator	H-33	1
		Air Conditioning Unit	H-33	1
8	CL-09	Amino-Acid Analyzer	H-33	1
9	CL-10	Ultra Centrifuge	H-33	3
34. IMPROVEMENT OF UNIVERSITY PRESS				
1	UP-01	Offset Machine	H-34	1
2	UP-02	Electronic Vertical Camera	H-34	1
3	UP-03	Auto Plate Maker Unit	H-34	1
4	UP-04	Printing Materials	H-34	1
5	UP-05	Book Binding Equipment	H-34	1
		Cutting Machine	H-34	1
		Sewing Machine	H-34	1
		Spring Binding System	H-34	1
		Lamination Machine	H-34	1
		Embossing Machine	H-34	1
35. UNIVERSITY CENTRAL REPAIR CELL				
1	RC-01	Oscilloscope, dual channel 60MHz	R.C.	1
2	RC-02	Frequency Meter	R.C.	1
3	RC-03	Pattern Generator	R.C.	1
4	RC-04	Digital Multimeter	R.C.	1
5	RC-05	Soldering Iron	R.C.	1
6	RC-06	Micro Soldering Gun	R.C.	1
7	RC-07	Desoldering Gun	R.C.	1
8	RC-08	Soldering Bath	R.C.	1
9	RC-09	Regulated Power Supply, 0-200V DC, AC	R.C.	1
10	RC-10	IC Tester	R.C.	1
11	RC-11	EPROM Copier	R.C.	1
12	RC-12	Soldering Desoldering Station with Spare Tips	R.C.	1
13	RC-13	Soldering Sucker	R.C.	1
14	RC-14	Serial Board	R.C.	1
15	RC-15	Soldering Desoldering Station for Surface Mounted Technology	R.C.	1
16	RC-16	Clamp Meter	R.C.	1
17	RC-17	Complete Tool Kit for Computer	R.C.	1

Agriculture

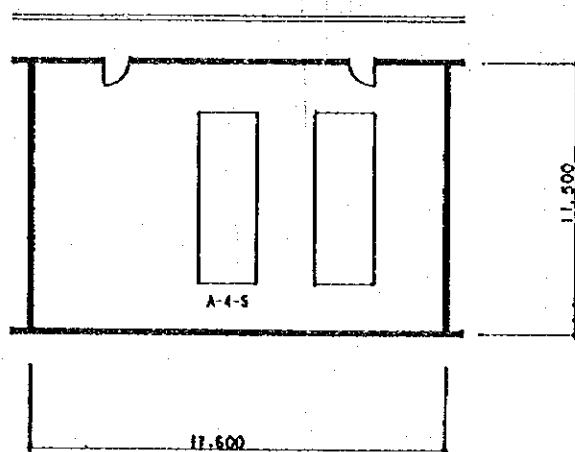
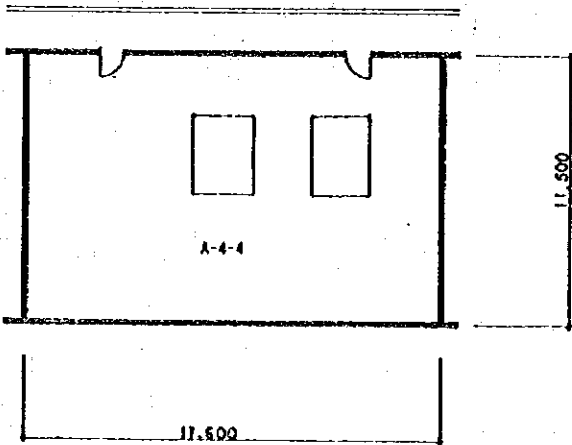
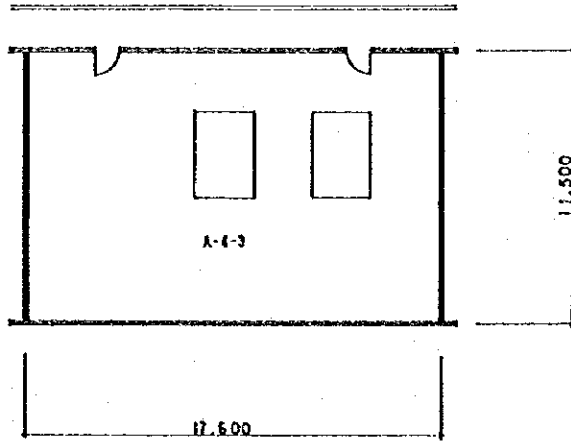
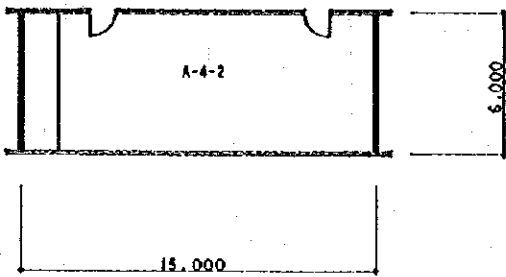
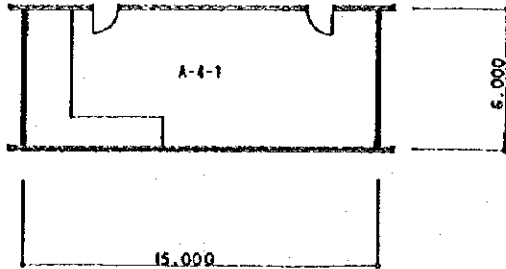


Agronomy

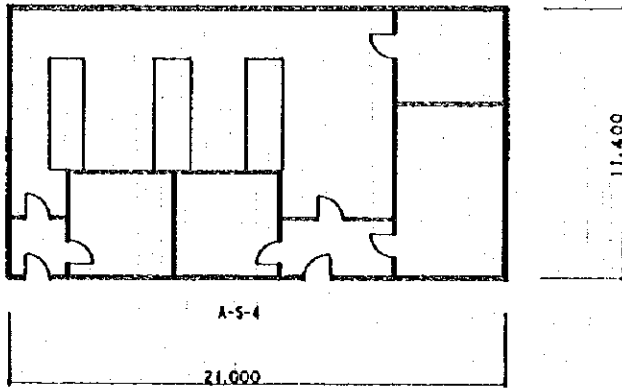
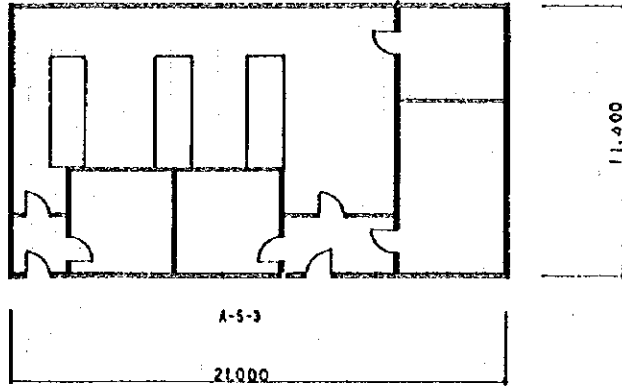
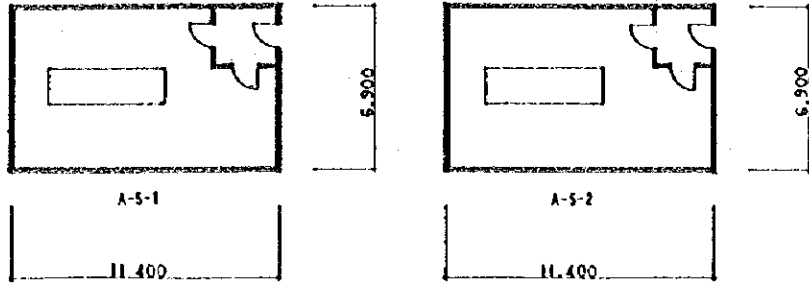


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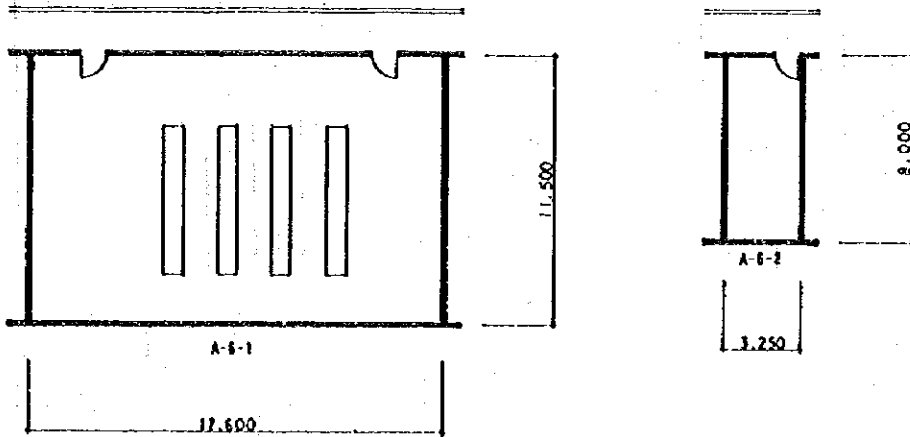
Forestry, Range Management & Wildlife



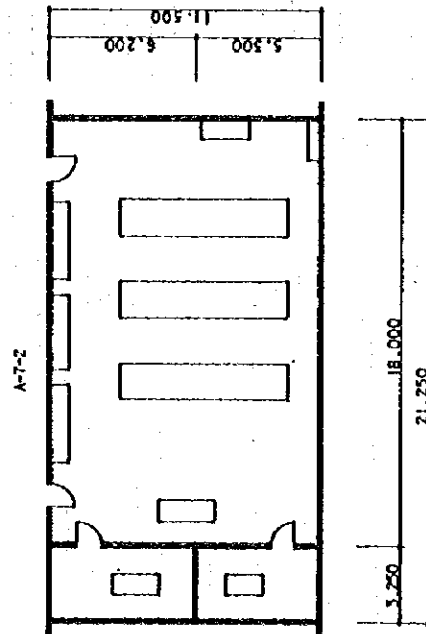
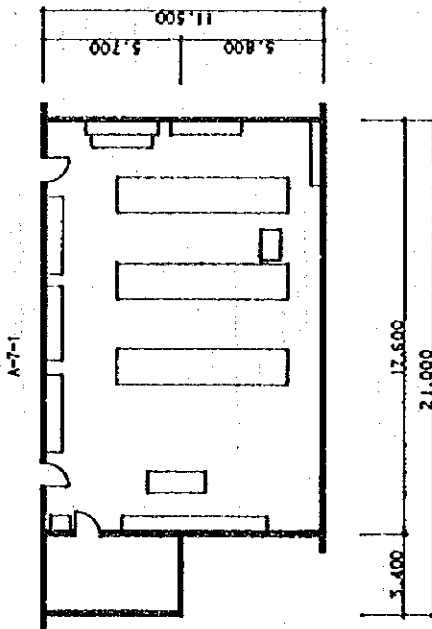
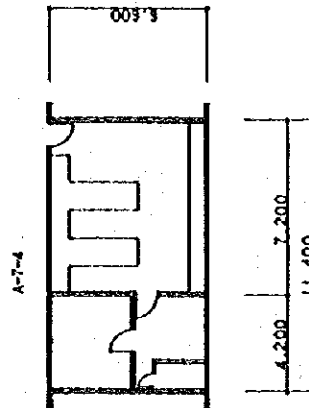
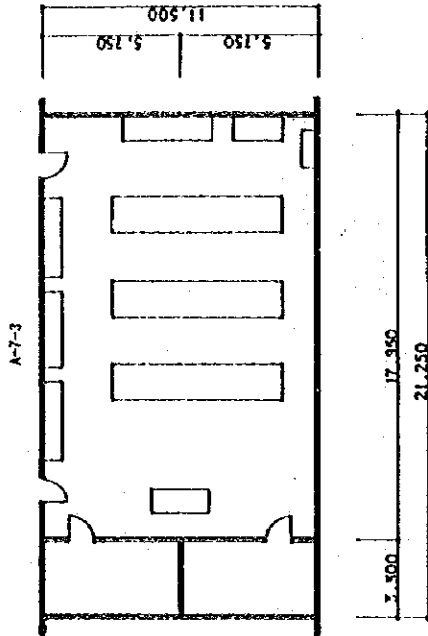
Plant Pathology



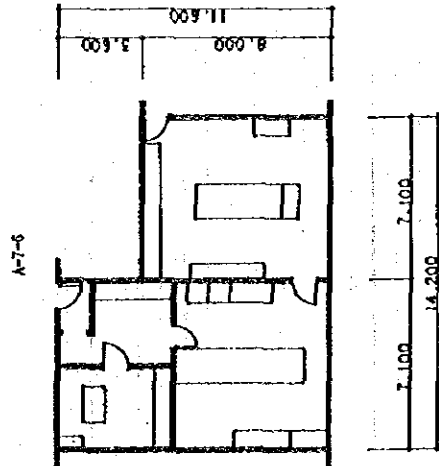
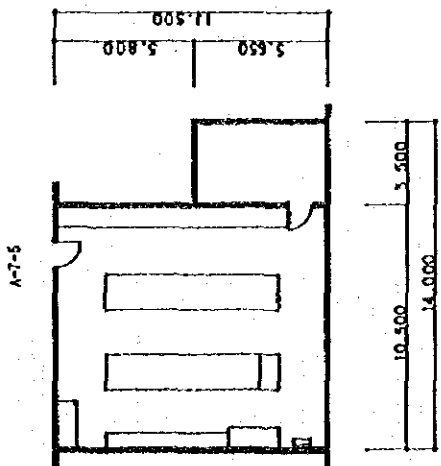
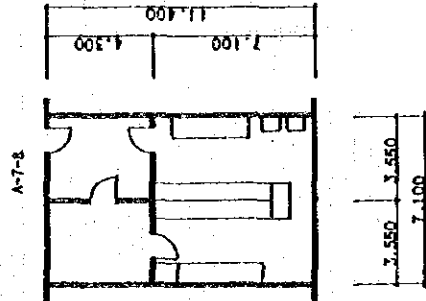
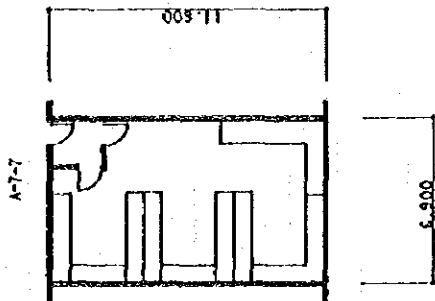
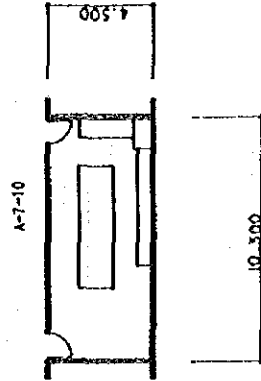
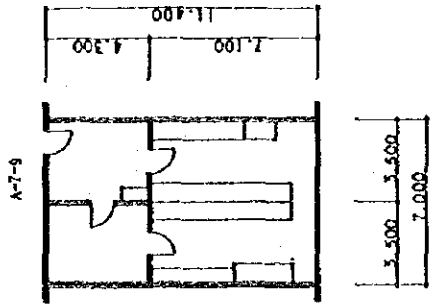
Plant Breeding & Genetics



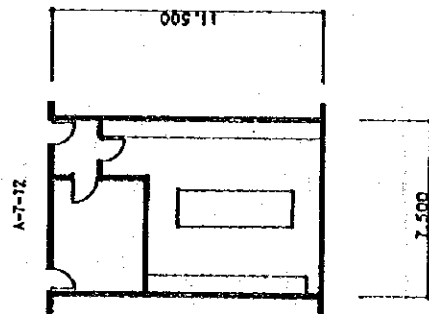
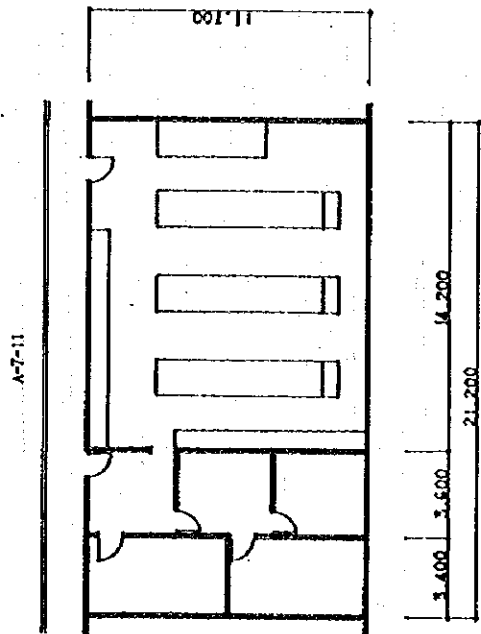
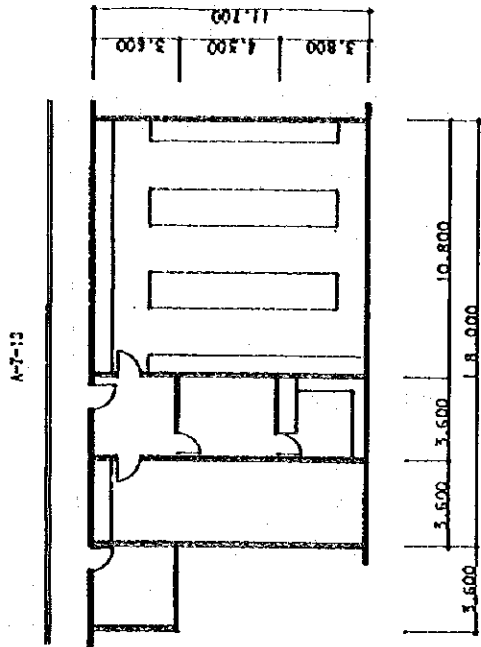
Soil Science



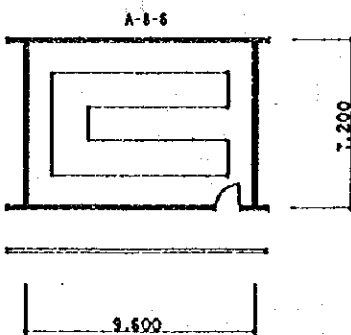
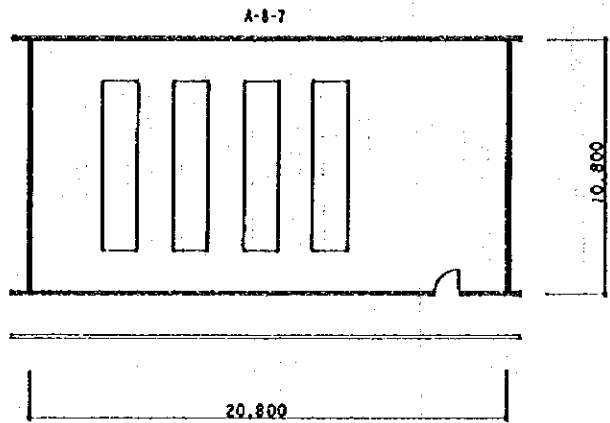
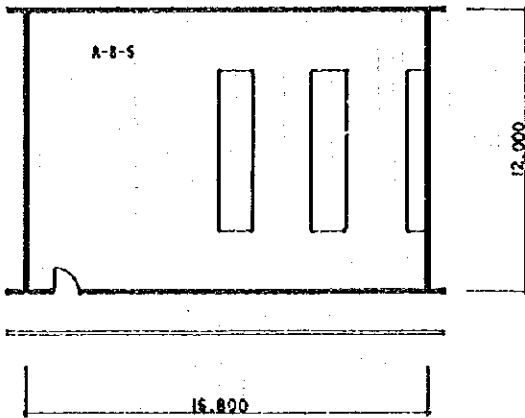
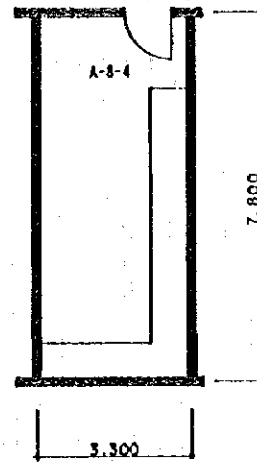
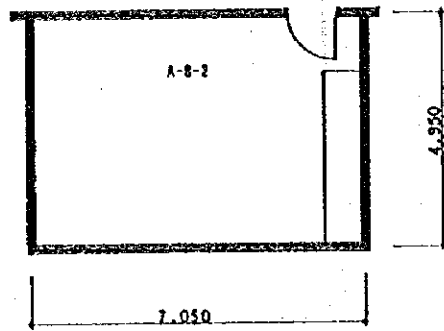
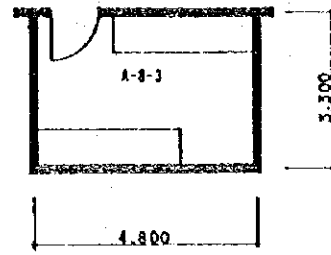
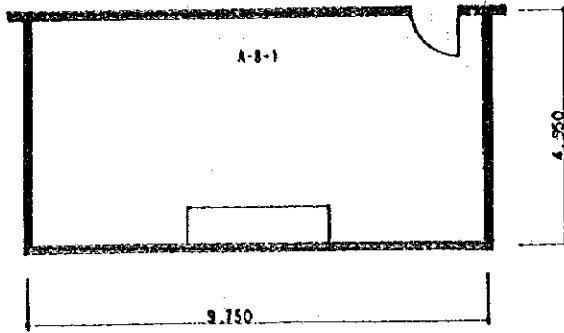
Soil Science



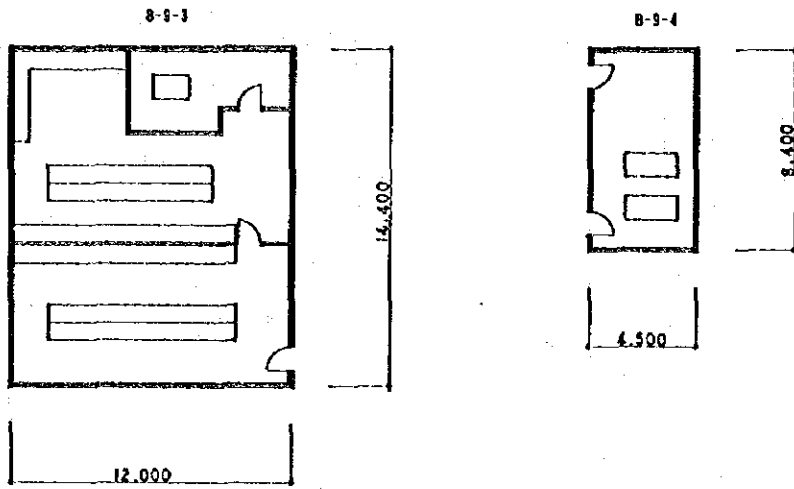
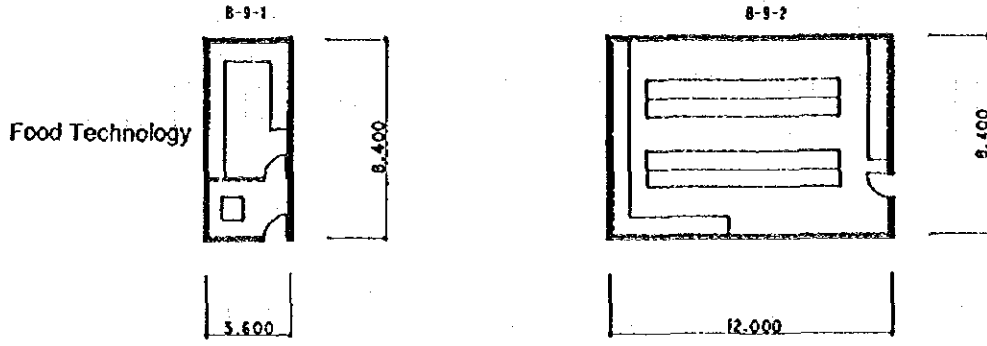
Soil Science



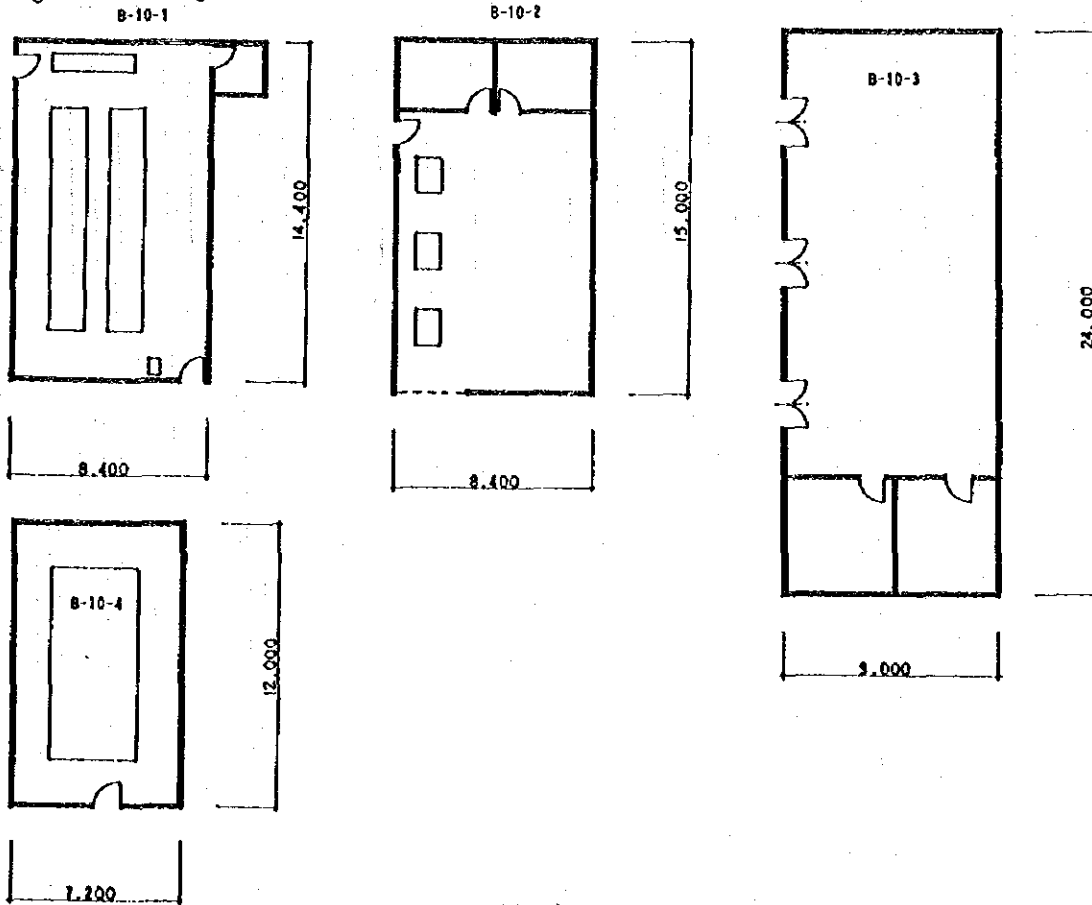
Agricultural Entomology



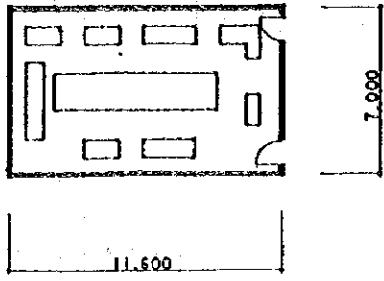
Agrl. Engineering & Technology



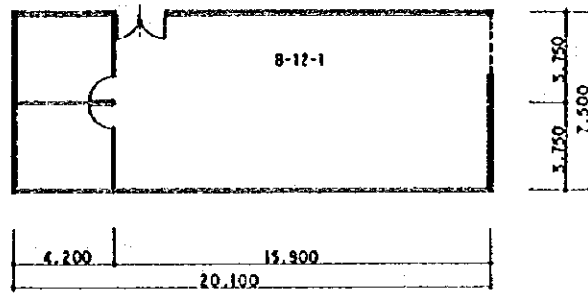
Irrigation & Drainage



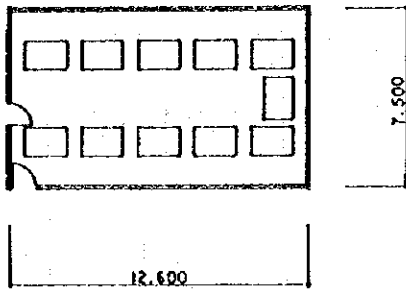
Fibre Technology
B-11-1



Basic Engineering



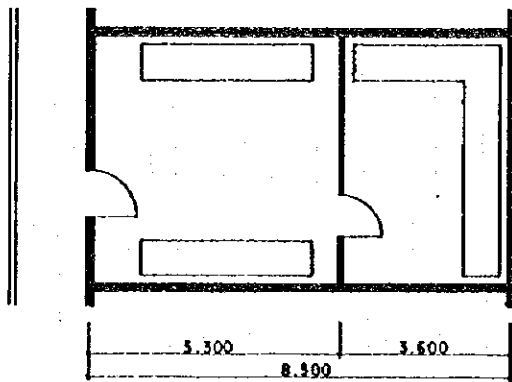
Farm Machinery & Power
B-13-1



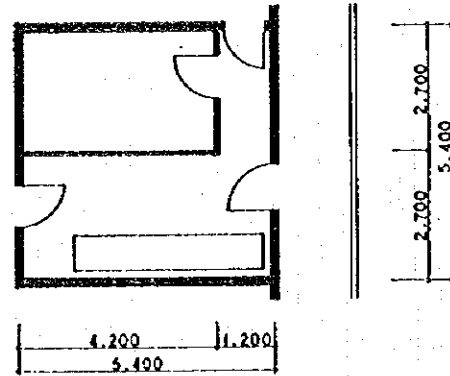
Basic Science

Botany

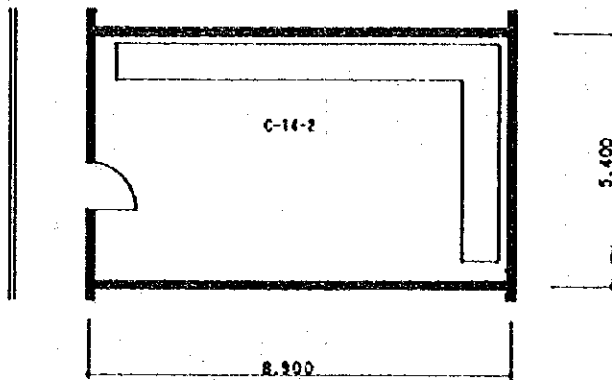
C-14-1



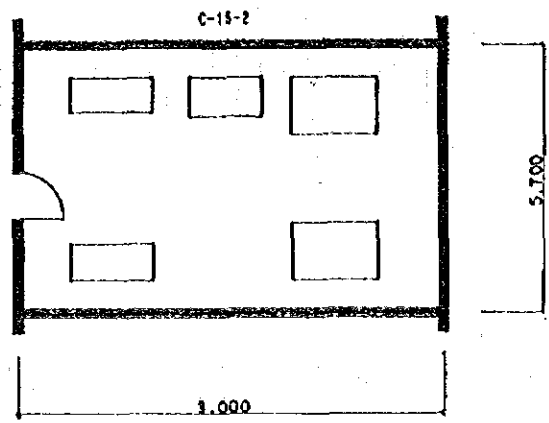
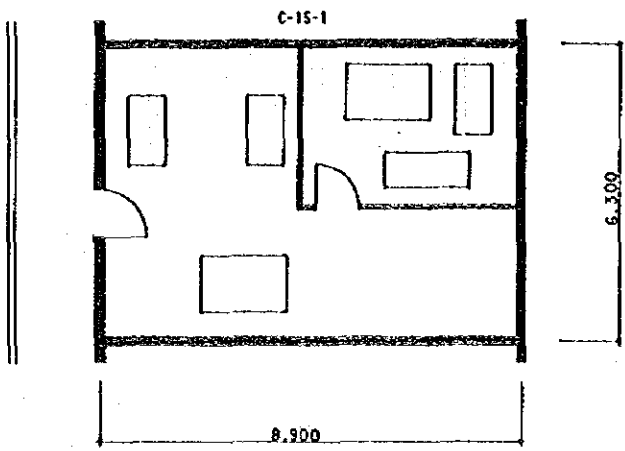
C-14-3



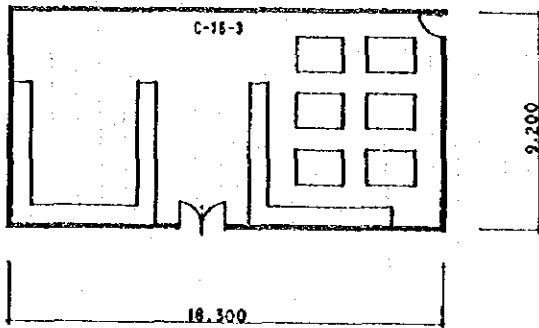
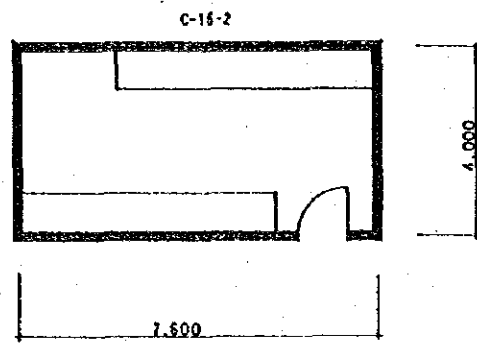
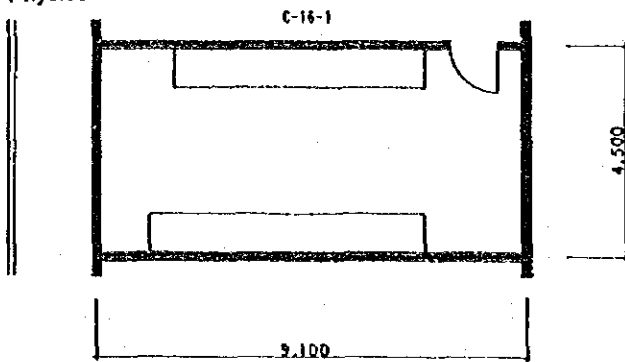
C-14-2



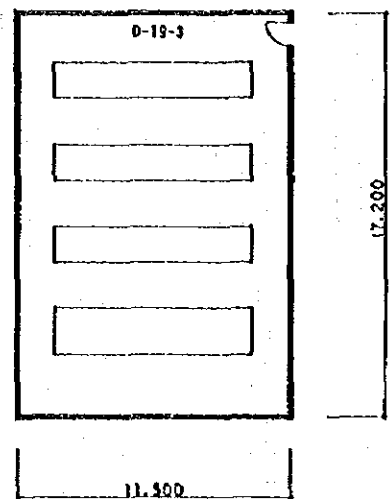
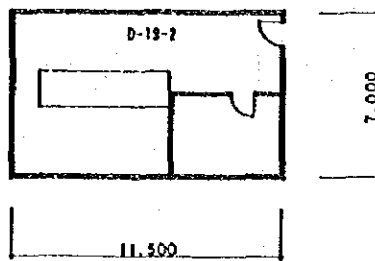
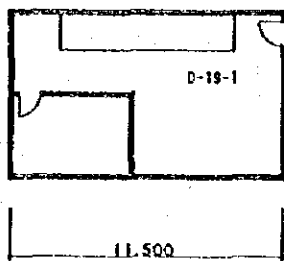
Zoology & Fisheries



Physics

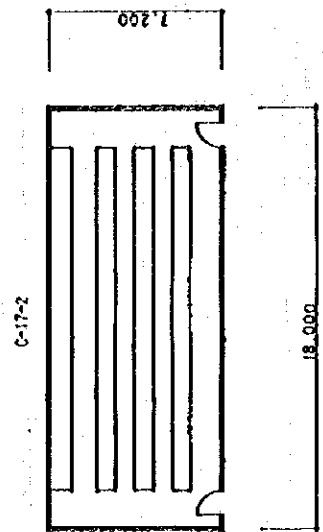
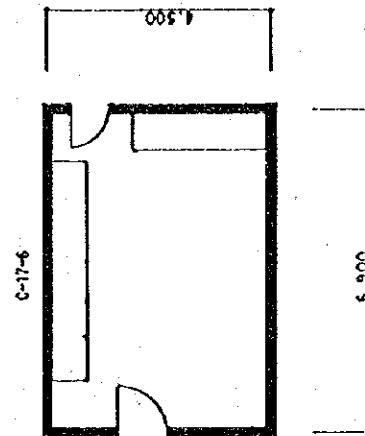
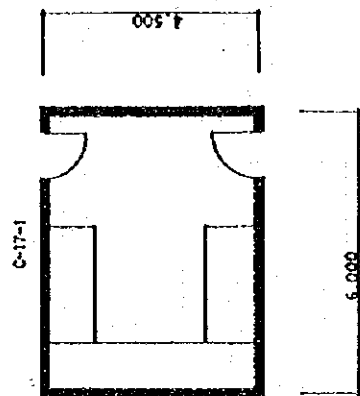
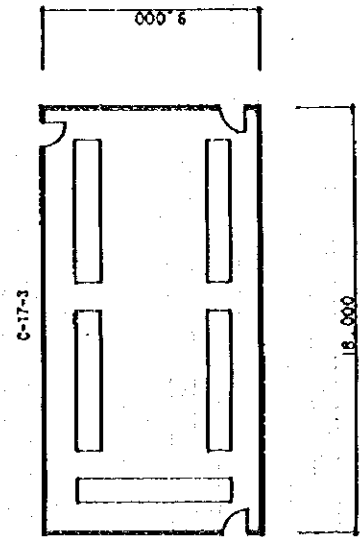
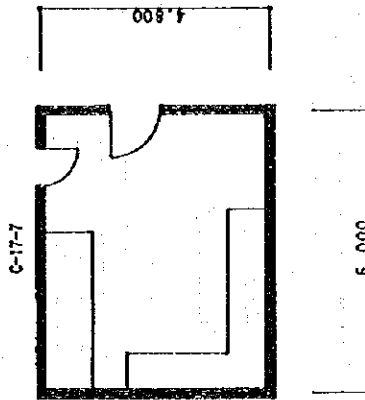
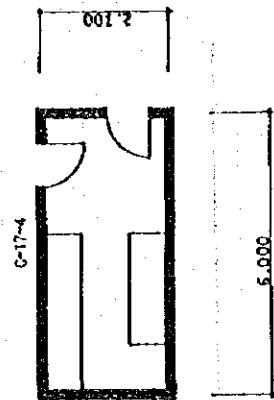
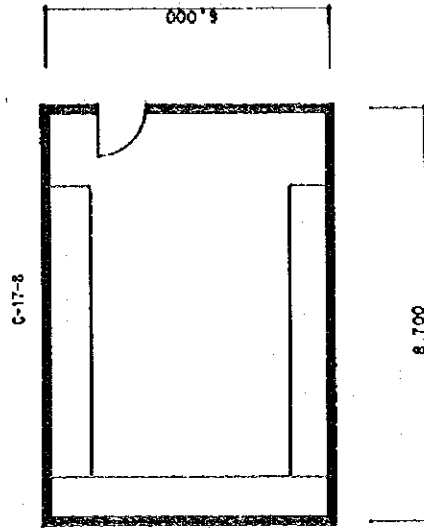
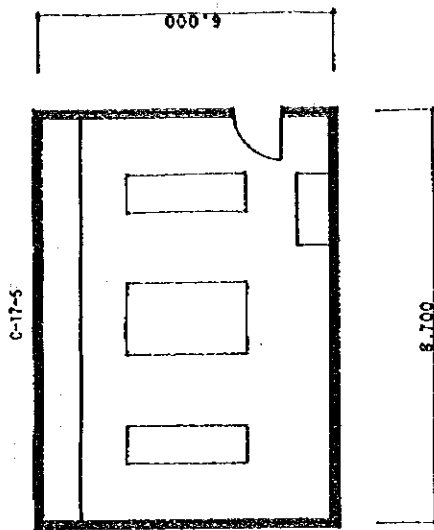


Animal Husbandry

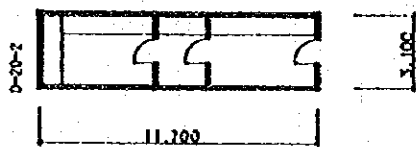
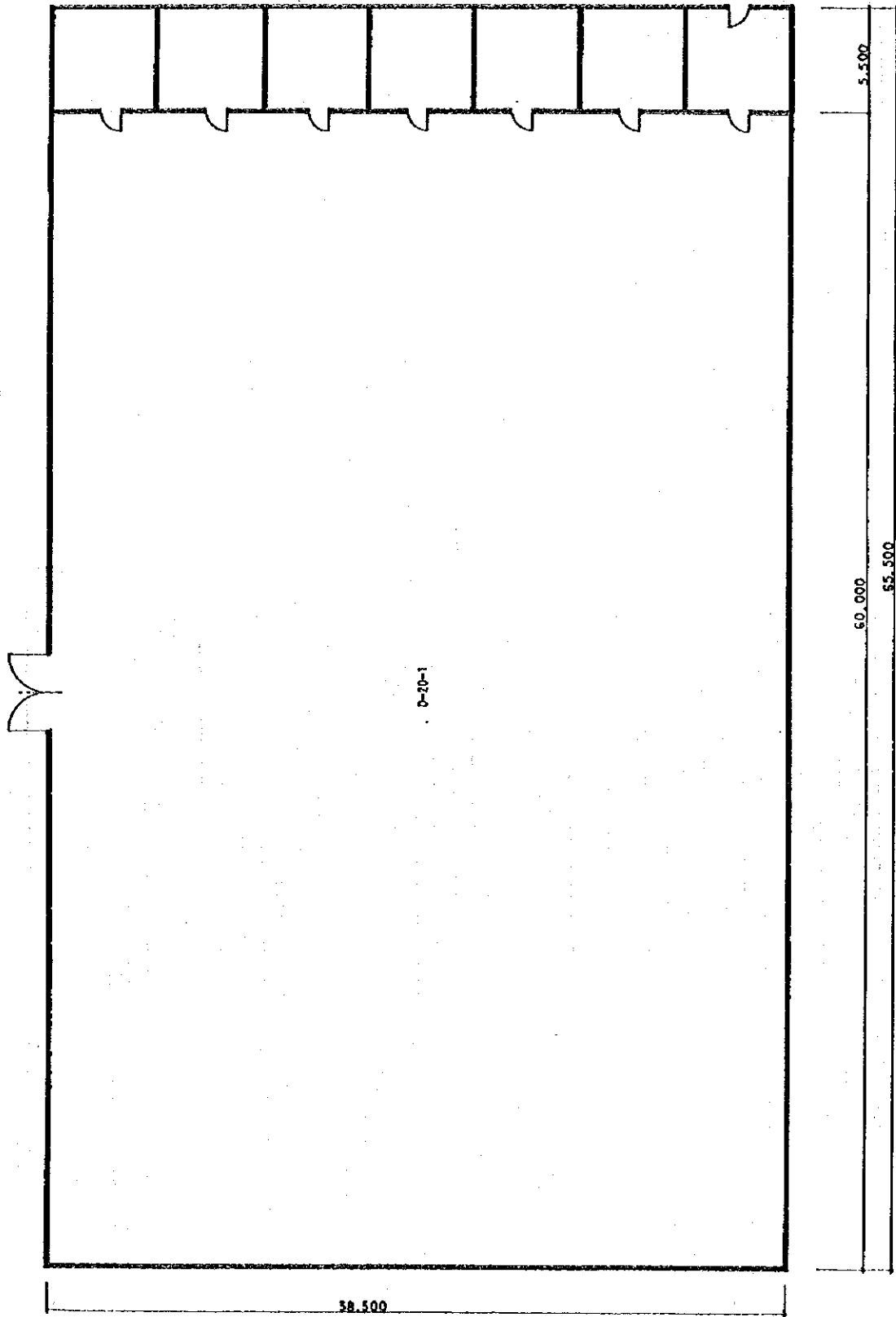


Livestock Management

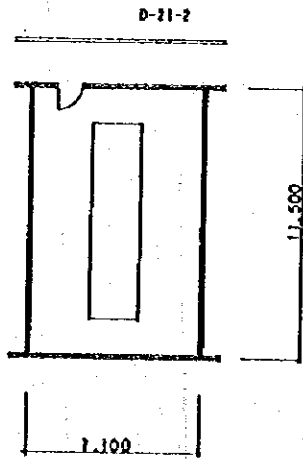
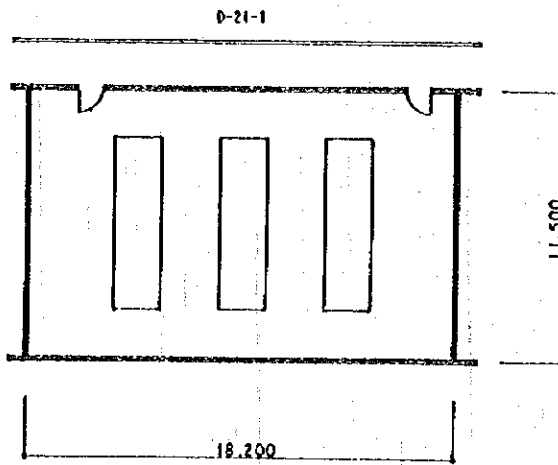
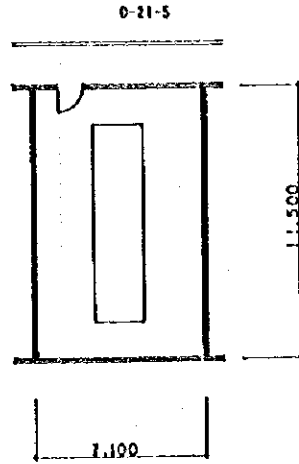
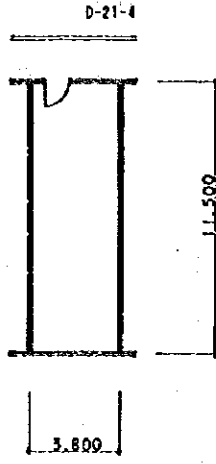
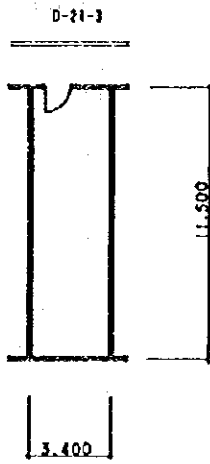
Chemistry/Biochemistry



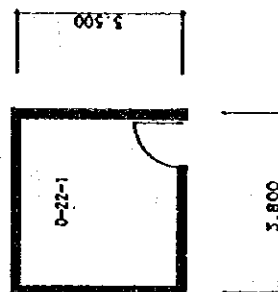
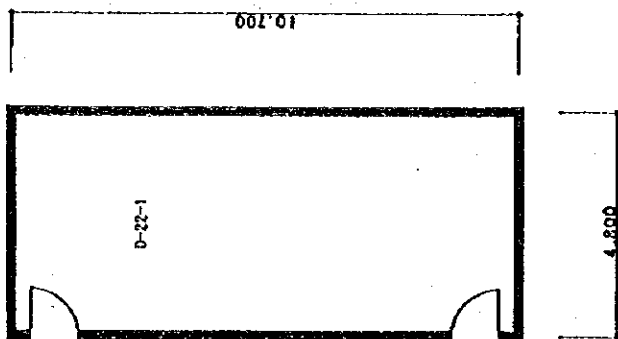
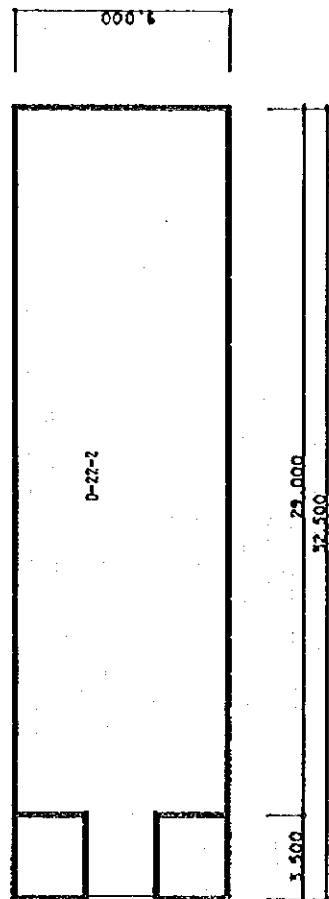
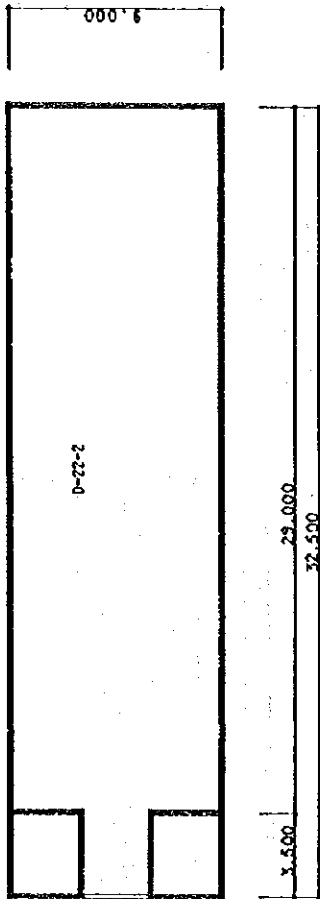
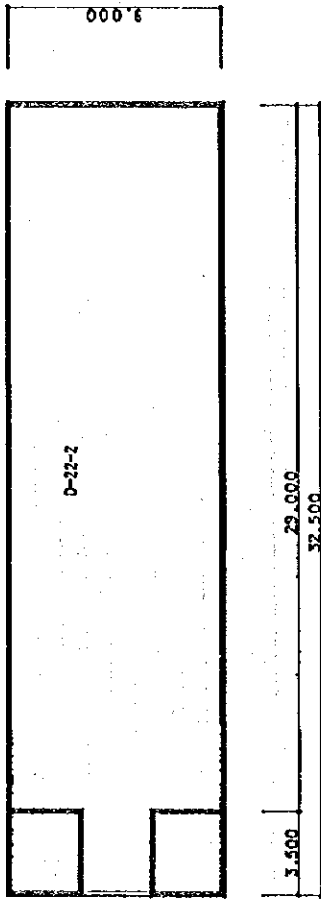
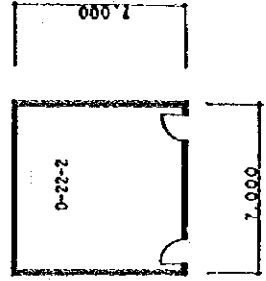
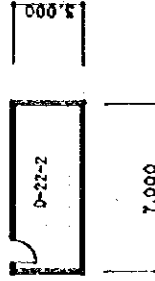
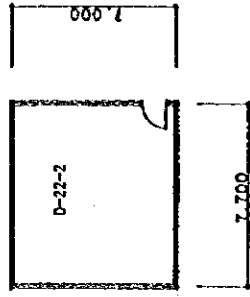
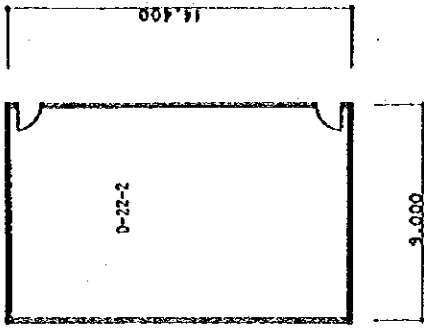
Animal Breeding & Genetics



Animal Nutrition



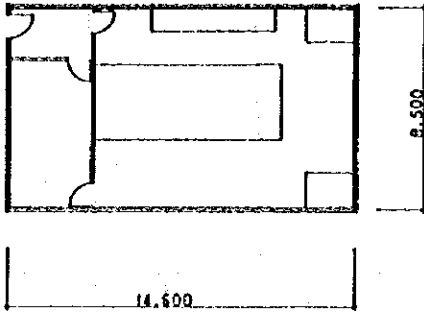
Poultry Husbandry



Veterinary Science

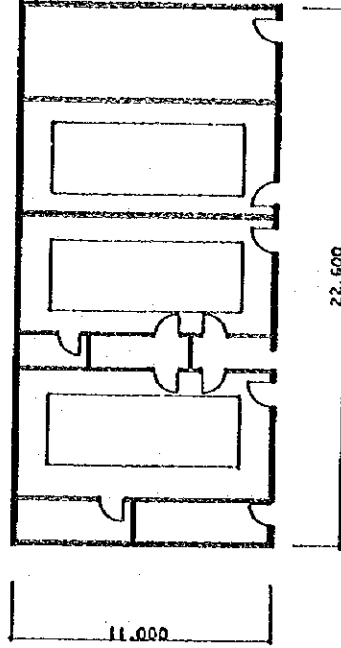
Veterinary Anatomy

E-23



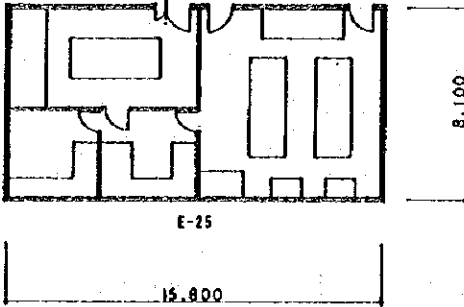
Veterinary Pathology

E-24



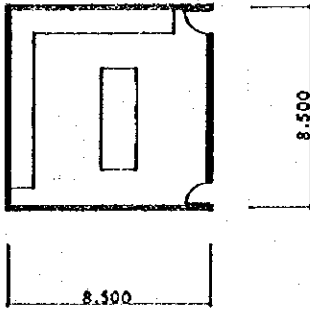
Veterinary Parasitology

E-25

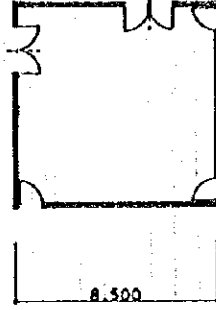


Clinical Medicine & Surgery

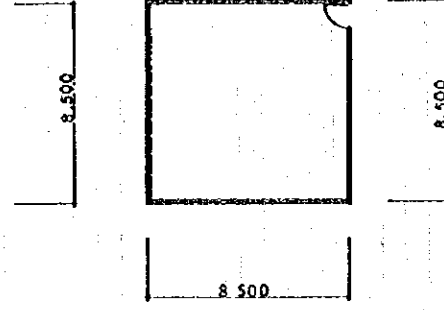
E-26-1



E-26-2

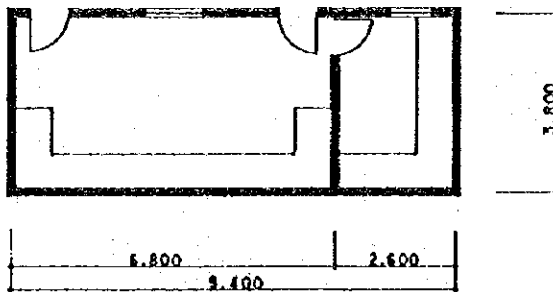


E-26-3



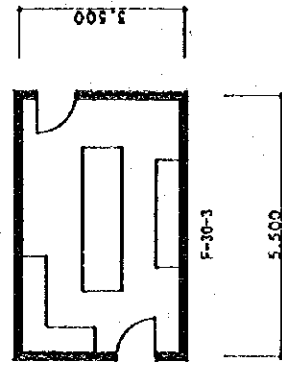
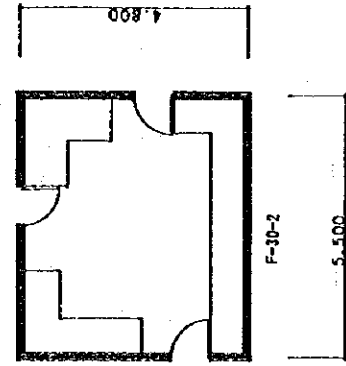
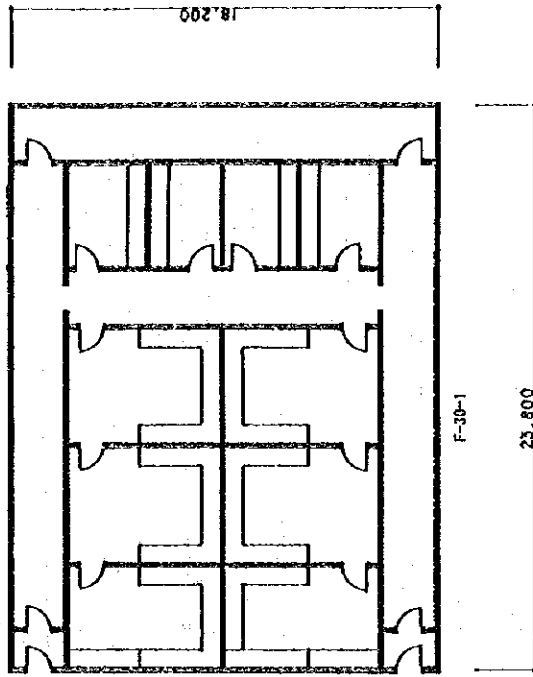
Animal Production

E-27

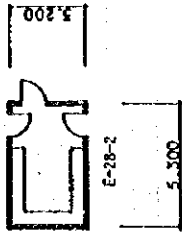


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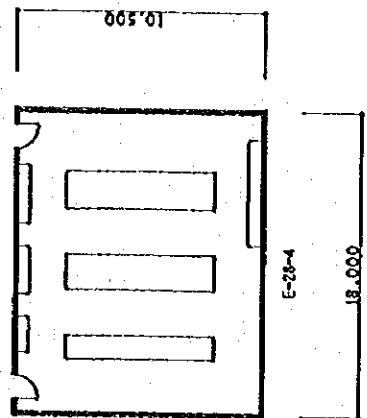
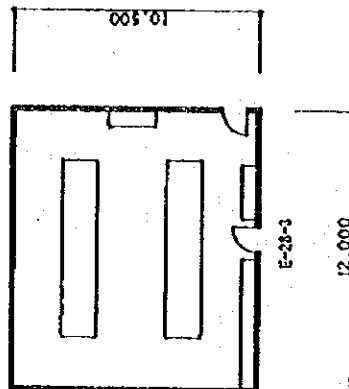
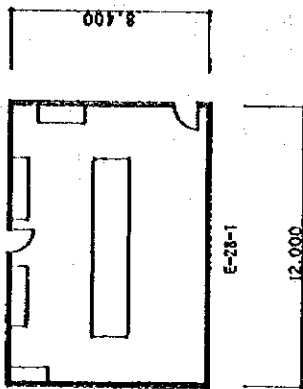
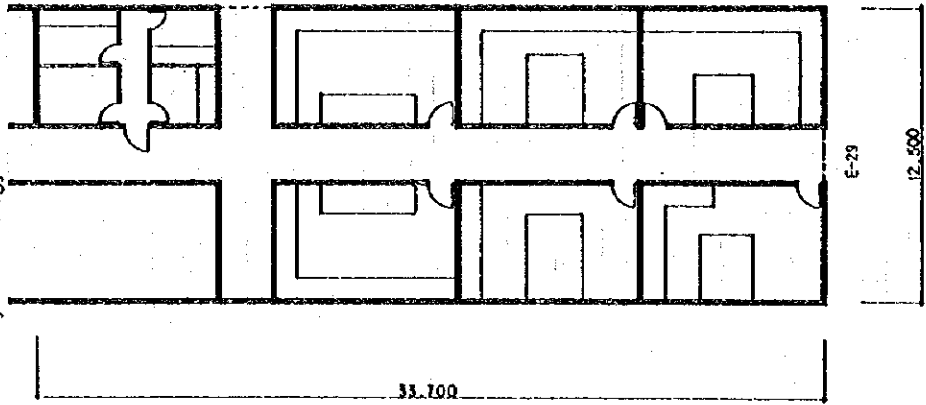
Various Dept.



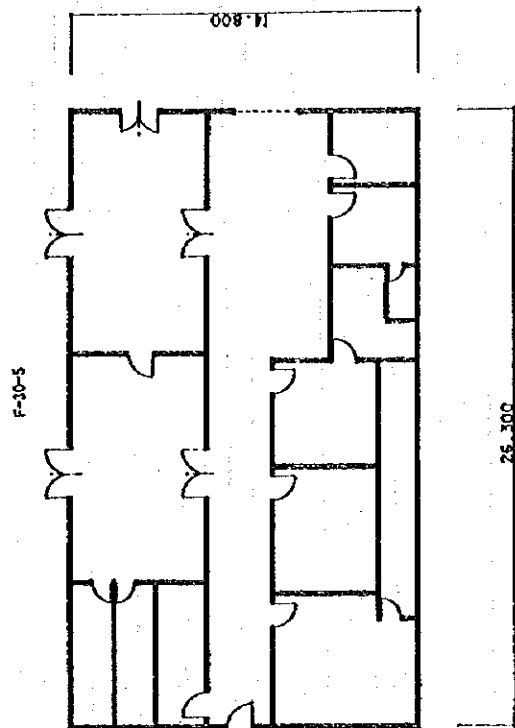
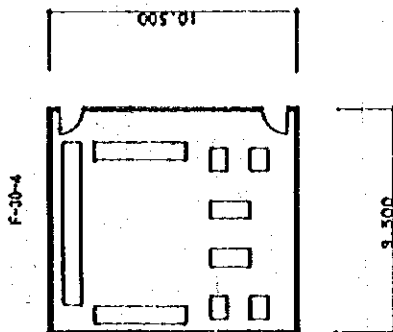
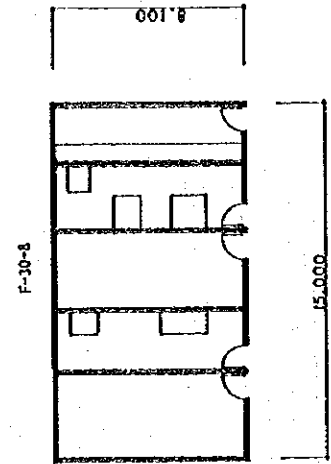
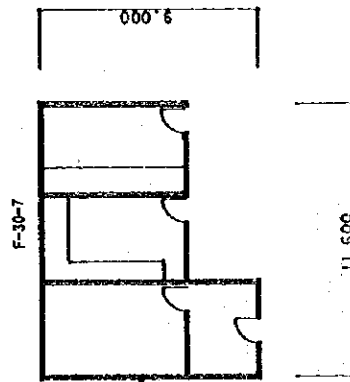
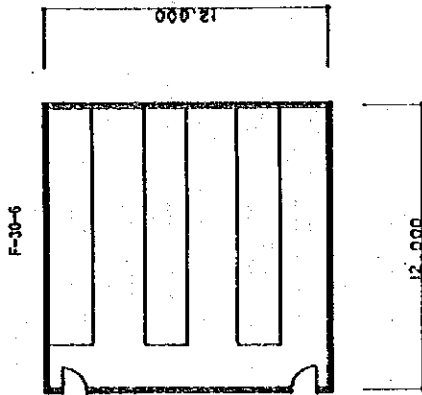
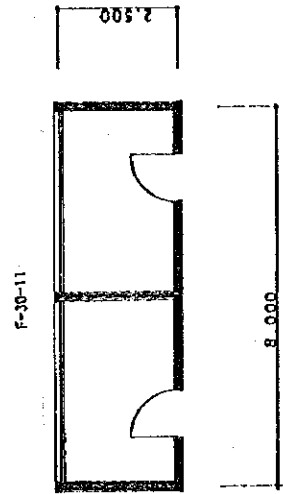
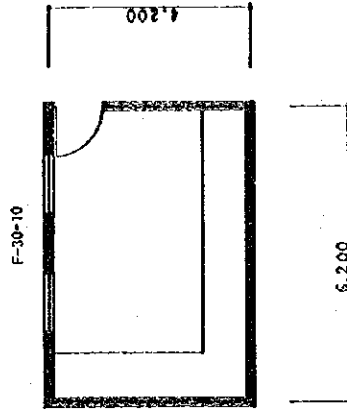
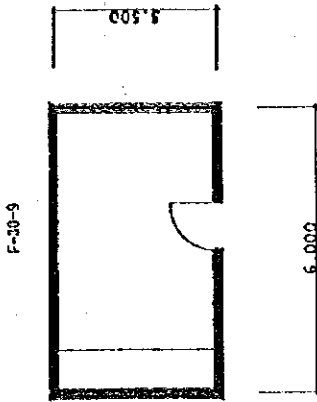
Physiology & Pharmacology



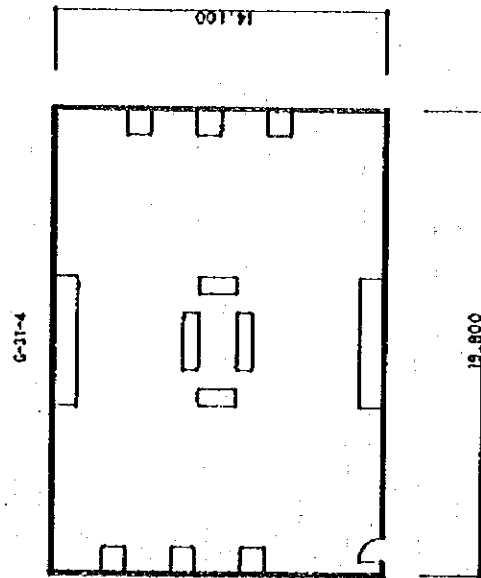
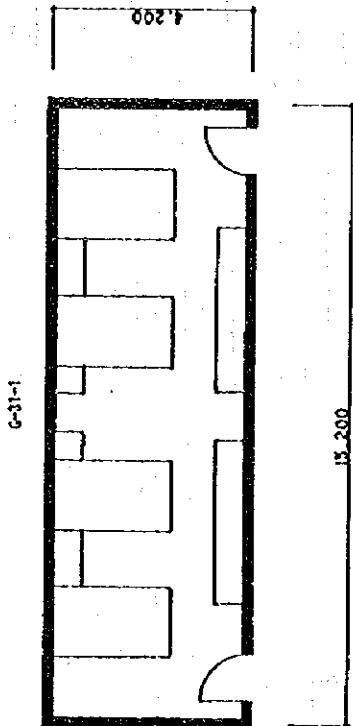
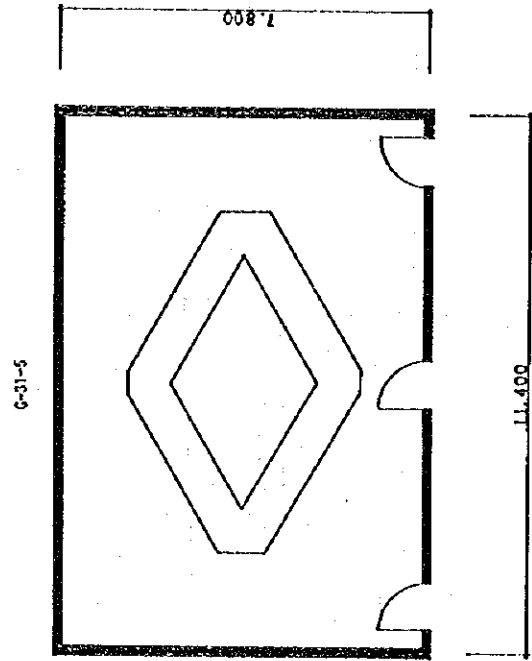
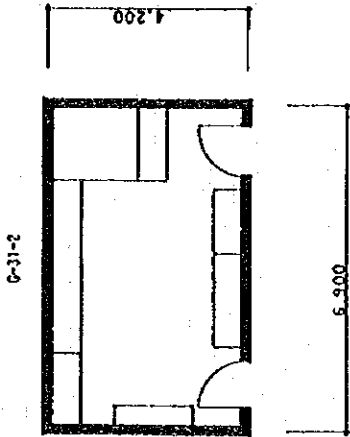
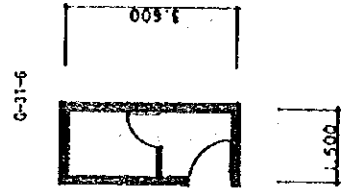
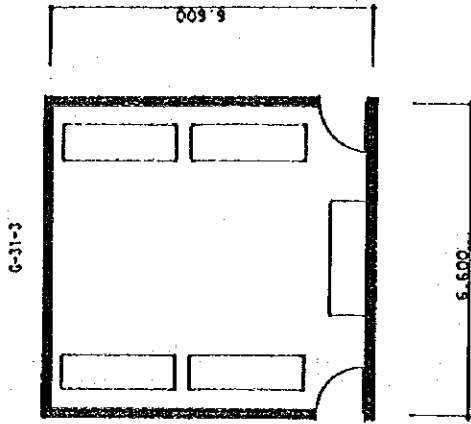
Veterinary Microbiology



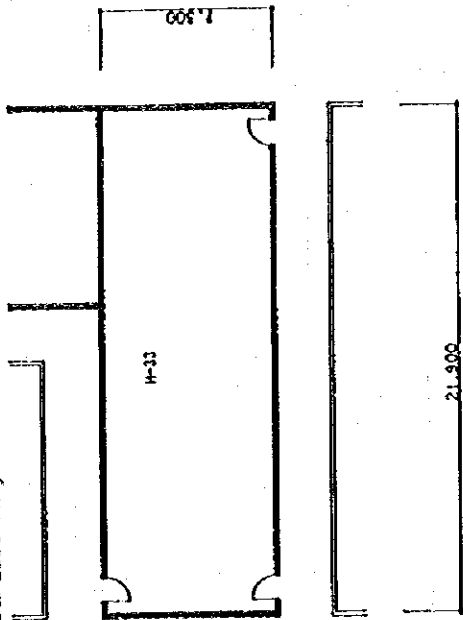
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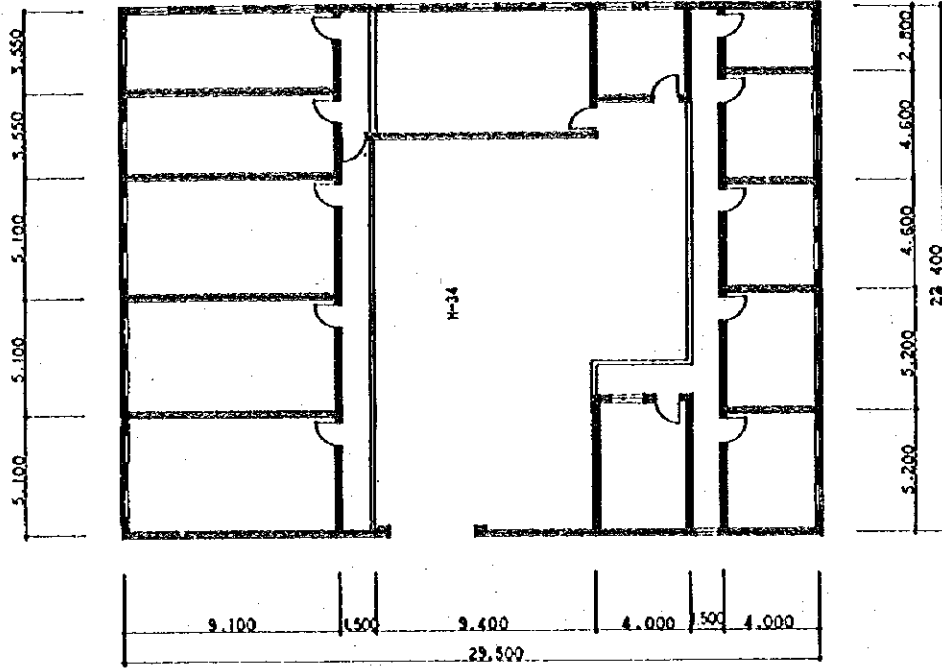
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