



National Agriculture Education Accreditation Council

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**Report of the
Accreditation Inspection Committee
(AIC)**

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ACKNOWLEDGMENT

The Evaluation Team acknowledges the support and cooperation of the honorable Vice Chancellor, Dean Faculty of Crop Sciences, Director IBGE and Faculty / Staff members of the Institute of Biotechnology and Genetic Engineering, Khyber Pakhtunkhwa Agricultural University Peshawar, Pakistan.

The immense help, guidance and logistic support of Mr. Naseer Alam Khan (Secretary), and Malik Muhammad Kashif Anwar (IT Coordinator), NAEAC Secretariat is highly appreciated.

Accreditation Inspection Committee (AIC), NAEAC

1. General:

1.1 Introduction:

The Accreditation Inspection Committee (AIC) setup by the National Agriculture Education Accreditation Council (NAEAC) for the external review of the Degree Programs (B.Sc(Hons), M. Phil and PhD of the Institute of Biotechnology and Genetic Engineering, Khyber Pakhtunkhwa Agricultural University Peshawar, Pakistan, visited the institute on May 13-14, 2011 for the in-depth review of the Institutes degree programs. The report of the Committee is presented below:

The AIC met on May 13-14, 2011 at the Institute of Biotechnology and Genetic Engineering to carryout external review of the Biotechnology degree program for accreditation.

1.2 Accreditation of Agriculture Education Institutions in Pakistan

In pursuance to its mandate given by the HEC under clause 10 sub-sections (d) and(1) of the byelaws of NAEAC, an Accreditation Inspection Committee (AIC) was constituted comprising of the following scientists to review the Institute of Biotechnology and Genetic Engineering, Khyber Pakhtunkhwa Agricultural University Peshawar, Pakistan for the assessment and accreditation for degree awarding academic programs:

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| i) Prof. Dr. Syed Dilnawaz Ahmed Gardezi
Dean, Faculty of Agriculture, Rawalakot,
University of Azad Jammu & Kashmir | Convener |
| ii) Dr. Shahid Masood
Senior Director/ CSO, IABGR, NARC, Islamabad | Member |

The main terms of reference (TORs) of the committee were as follows:

- To validate the self-assessment report (SAR) of the degree programs (B. Sc. Hons and M. Phil.) prepared by the Institute of Biotechnology and Genetic Engineering (IBGE).
- To carry out external evaluation of the degree programs in a transparent, neutral, holistic and participatory manner for accreditation and rating **based on seven (7) evaluation criteria given in the Evaluation Manual.**
- To submit synthesized and concise analytical report (4-5 pages only) consisting of SWOT Analysis and actionable recommendations based on the instructions provided by the Dean, Director, Faculty Members, Students,

Support Staff and Alumni as well as detailed visit of physical infrastructure, facilities other teaching-learning resources available for the degree programs.

- To submit clear, specific and justified degree programs accreditation and rating recommendations to the Chairman NAEAC within two weeks of the on-site visit.

The itinerary of accreditation visit schedule is given at Annex-I.

1.3 The University

College of Agriculture was setup in Peshawar University in 1957/58. In 1963 Agriculture College was shifted to a new building and M Sc (Hons) program was started within the Peshawar University. The College gained the status of Faculty of Agriculture under Peshawar University during the year 1973 and was given the status of Independent University during 1981. Former NWFP Agricultural University and now Khyber Pakhtunkhwa Agricultural University comprises of various Faculties constituting various disciplines of agriculture and allied sciences. The main institutions and faculties are; Faculty of Crop Production, Faculty of Crop Protection, Faculty of Nutrition Sciences, Faculty of Rural Social Sciences, Faculty of Animal Sciences, Institute of Biotechnology and Genetic Engineering, Directorate of Teaching, Directorate of Advanced Studies and Research, Directorate of Quality Enhancement.

The Institute of Genetic Engineering & Biotechnology was established in 2000 with the Central Government funds and its founding Director was appointed who was directly responsible to the Vice Chancellor.

1.4 The Institute of Genetic Engineering and Biotechnology (IBGE)

The Institute is one of the new establishments of the Agricultural University started in two rooms during the year 2000 but soon after the completion of its own building during 2004 it took jump start and initiated research and teaching in state-of-the-art laboratories. M Phil program was started during 2001 whereas PhD program and B.Sc Hons. biotechnology was started during 2003 and 2006, respectively. During six years of functional life the Institute has produced 03 PhD's, 100 M Phil and two batches of B.Sc. (Hons) biotechnology graduates (25x2= 50). The Institute has now gained a leadership position in the provincial teaching and research organizations. The Institute comprises of 15 Faculty members out of which 11 holds PhD while two are abroad doing their PhD and only two faculty members hold M Phil degrees. There are 3 Professors, 11 Assistant Professors on Tenure Track System (TTS) and two lecturers in the Institute. The department comprises of 21 members academic, 18 of the staff members are Ph.D. qualified. IBGE has released two rust resistant varieties for irrigated areas namely Sran-2010 and Atta-Habib-2010. Few Brassica advanced lines resistant to aphids and having high oil contents are in pipeline as candidate varieties. The faculty members have published 100 international and 140 national scientific papers and also honored with a pride of performance from the Provincial Government.

The institute has been perpetuating brilliant history of medal winning students for their academic distinctions. Besides academic activities the teaching staff endeavors for the DNA fingerprinting of indigenous sheep breeds, medicinal plants research, exploitation

of in-vitro technology and Marker Assisted Breeding for field crop research. The Institute has the privilege of developing manpower in the field of plant and animal biotechnology, human health and is being represented at different levels of provincial research and teaching.

1.5 Program Mission

The Institute mission is to produce quality graduates of substantially higher caliber and conduct result oriented research by applying innovative biotech techniques thereby to play a role in capacity building and offering solution to the agriculture related problems of national importance.

Program objectives

- Manpower development through undergraduate and postgraduate degree programs and short term training courses.
- Engagement in target oriented applied and basic research of international standard.
- Strive for innovation, generation of knowledge and development of products and processes.

Section-2: Point wise Analysis

2.1 Curriculum Design and Development

The curriculum followed is developed by the national curriculum committee constituted by HEC. The curriculum implemented was designed during the year 2006 and it was revised during 2010 under HEC curriculum review program.

Students Perception: The undergraduate and post-graduate students were contacted to have their opinion about the contents of the courses, method of teaching, use of teaching aids, conduct of practical and field exposure, examinations, grading and awards. The students were satisfied with the teaching methodology which was very well covered both by theoretical as well as practical components of the courses. The laboratory facilities were adequate as the number of graduates taken in each class is ideal i.e. 25 in B.Sc (Hons) and 20 in M Phil program. The green house, screen house and farm field facilities were also available for student's research and field activities. According to the students view point the young teachers are performing excellent duties in supervising their research and encourage maximum student's participation.

- The objectives set out by the department were found clear and achievable. These included the capacity building, academic and applied research, quality seed production for distribution among farmers and development of linkages with the sister organizations and stakeholders.
- The department has small internal library having 1200 books other than the main Library which holds 20000 electronic journals in addition to the large collection

of reference and subject books. The students also take the advantage of the main library and are allowed to borrow books.

- Net instructional hours are according to HEC plans and courses are generally completed before the examinations.
- Course files are well maintained by the teachers and the Institute.
- Admissions, course registration and withdrawal policy matches with that planned by HEC.
- The course evaluation system is more or less according to the HEC instructions. The mid-semester, final semester and practical examinations are being held according to the schedule given by the Director of the Institute. Quizzes, assignments are also given to the students.
- Institutional Board of Study, Faculty Board and Academic Council exist and regularly meet in the Institute / faculty and take input of stakeholders, outside University scientists and from NGOs.

2.2 Strength and Quality of Faculty

The Faculty of the Institute is well qualified in major areas of biotechnology. It includes plant biotechnology, marker assisted breeding, tissue culture, genetic transformation, animal biotechnology, genomics and microbial biotechnology. Of the 15 teachers/scientific staff, 11 are having PhD, 2 staff members are in process of acquiring PhD degrees while 2 members are with M Phil. Majority of the staff earned PhD from abroad and 3 staff members also earned Post-doc experience from abroad. Most of the faculty members are young and energetic therefore they will put maximum efforts for the advancement of research and teaching in the Institute to develop their own career.

Academic Programs:

Following academic programs are being catered within the Institute of Biotechnology and Genetic Engineering.

A) B.Sc. (Hons) Biotechnology. The students are taken after F.Sc and offered general introductory courses of biotechnology including plant, animal, industrial and pharmaceutical and fungal biotechnology, bioremediation, marine biotechnology and nanotechnology. There are 133 credit hours taught courses. Presently the department takes 25 students every year which is an ideal number of students in a class according to universal standards.

B) M Phil Degree Program: The students after graduation in biotechnology are offered M Phil degree program comprising two years of taught courses and thesis research. The number of M.Sc (Hons) students taken in each semester is 20-22. M Phil students have to take 38 credit hours courses plus 10 credit hours of thesis research.

C) PhD Program: The students after completing 18 years of education having M. Phil (Hons) in biotechnology are offered PhD degree program which is for 3-5 years depending upon the efficiency of the students in the conduct of taught courses (18 hours)

and the research. Each Ph.D. student has to publish at least one research paper during his study period as a requirement of HEC.

Salaries of the teachers are according to the pay-scales of Professors, however, most of them are on Tenure Track System (TTS).

2.3 Students Support and Progression

The students have access to the Central Library. The online facilities for literature retrieval also existed within the main Library. The institutional Library has only few collection for reference. Some computers and internet facilities are available for under and post graduate (M Phil and PhD) students within the institute however that needs to be upgraded.

Admission system is transparent and intake is quite adequate. The student's drop out percentage is very low. The sport facilities are only available in the main campus of the University. The need based scholarship facilities to the students are not available for the needy students. Similarly the merit scholarships are not offered to students of the Institute. Generally in the Institute the overall concept of scholarship was lacking which is quite strange. Student-teacher counseling is strong in the Institute but medical and hostel facilities were lacking.

2.4 Infrastructure and Learning Resources

The Institute has good infrastructure for the research having state-of-the-art laboratories, however the lecture room facilities are not up to the required standard. There is no separate sitting place for female students and canteen or cafeteria in the Institute was missing altogether. The space problem will be over as the new building of the Institute is near to completion. The teaching aids like multimedia, white boards and others are available but student's complaint for the shortage of multimedia. There are only two multimedia systems in the Institute which are not sufficient for 6-7 classes of graduate and post-graduate students going on at the same time. There is no separate space for sitting of students (Post graduate) where they can work peacefully for lectures and research work. The computer and internet facility available for students within the department is not sufficient very low and needs to be upgraded.

2.5 Research and Consultancy activities

Research activities of the staff and the students were visited in the labs as well as in the fields. They are running good quality projects and the post-graduate students were also found to be involved in the research work. The farm activities indicated that the staff and students are actively engaged in research activities being carried out by different groups according to their specialization e.g plant biotechnology, in-vitro culture, animal biotechnology, health and environmental biotechnology. The Institute has released two wheat varieties through Marker Assisted Breeding within six years active life of the Institute is a good indication of the strength of research. The Institute own its green houses, screen houses, field area for research purpose and other farm facilities.

2.6 Governance and Leadership

The institutional activities were well organized both in teaching and research but it was observed that the funds for students practical and research are not sufficient within the Institute however reasonably good funding is available through research projects. The university statutory bodies like the Faculty Board, Academic Council and Syndicate are in place for supervision of the teaching and research activities as well as other matters of concern. Close cooperation among the staff and Director was observed during the visit in collective and individual meetings which is quite encouraging at the Institute level.

2.7 Innovative Practices

The qualification and potential of the Faculty is appreciable however most of the staff members are quite young and needs more experience. The innovations and research require peace of mind, good environment and time. There is shortage of space and other utilities like canteen or cafeteria which may be met after completion of new building. The staff of the department has evolved two improved rust resistant varieties of wheat (Siran 2010 and Atta-Habib) by blending conventional and biotechnology techniques. They have also identified good quality and high yielding lines of Brassica which are now in the process of field testing.

Section-3 SWOT Analysis

3.1 Major Strengths:

- Well qualified faculty with broader vision and will to work for students training and research.
- Good infrastructure and state-of-the-art laboratories for conducting biotechnology work.
- The Institute has ample research farm, green houses, screen houses and other facilities for conducting research.
- Faculty members have good publications in HEC recognized and high impact factor journals.
- The Institute Board of Studies and Governing Body are well organized and regular meetings are held for solving the academic matters of staff and students.
- Departmental library is well organized and has good number of course/reference books.

3.2 Major Weaknesses:

Following weaknesses were observed while visiting and contacting the stake holders.

- The residential hostel facilities for both male and female students are lacking as well as sports facilities are lacking.
- The space in laboratories and lecture rooms is not sufficient according to the number of under graduate and post graduate students.
- The student's complaints for the non availability of scholarship were genuine, even the merit scholarships were not in place.
- The computer facilities for students within the department are limited and hence the internet facilities could not be approached accessed.
- There is no sitting arrangement for research students (Post-grads) within the Institute only one common room is available for all students.
- Funds for the post-graduate research are not adequate. The only source is the research projects earned by the faculty.

3.4 Major Opportunities:

- The tissue culture area of the Institute is very strong and many endangered and medicinal plants are being multiplied. The graduates of the Institute have good job opportunity.
- The Institute may offer training programs in advanced techniques like MAS (marker assisted selection), double haploid production, tissue culture and gene transformation for which the expertise are available.
- The post-graduate students demand teaching and research in industrial biotechnology because of good job opportunities available in this area.

3.5 Major Challenges:

- With the fast technological advancement in the field of biotechnology, it will be a big challenge to impart training to students in these emerging areas of science in future.
- The documentation of plant material, animal breeds, microbes and other biological sources based on molecular markers would be a challenge for the future.
- The production of improved genetic material, hybrid seed, vaccines, diagnostics and their provision to the stakeholder will be a major challenge where lots of business opportunities prevail.

Section- 4 Recommendations:

4.1 General Recommendations

- Lecture rooms facility may be increased according to the number of classes and degree programs.
- A digital library with online linkages may be provided at the Institute level for free access to final year B.Sc and the post-graduate students.
- There must be some space for the students to sit and plan the experiments and to keep their research material.
- System of students' scholarships from the University sources and other donor agencies needs to be explored.
- There should be a separate sitting room along with attached washrooms for the female students in the department/faculty.
- The computer and internet facilities for the post-graduate students must be extended.
- The students support and co-curricular activities/facilities may be provided.
- Hostel accommodation for male and female students may be provided near the campus and the students may be given access to the laboratories after work hours.

4.2 Final Recommendations

Most of the teachers (11 out of 15) of the institute possess PhD in various disciplines of biotechnology. The staff members except 3 Professors are very young, energetic and are just at the beginning of their career. They have good training and exposure to their field of specialization including plant and animal biotechnology, microbial, environmental and health biotechnology. The Institute has state-of-the-art research laboratories and good teaching facilities. In order to harness the full potential of the physical infrastructure and trained manpower following suggestions may please be considered for institutional and national interest.

- More furnished lecture rooms and teaching aids like e.g. multimedia and digital library resources within the institute are recommended.
- The students and teachers may be given access to laboratories after late hours to carry out their research work.
- Computer facilities need to be upgraded within the department to have an access to online journals and textbooks.
- The senior teachers may be encouraged to write course books for graduate and post graduate students.
- The students may be provided scholarship facilities at least 10% merit scholarships within the institute for motivation and better incentives.
- The sports and co-curricular activities may be encouraged.

- The hostel accommodation for male and female students and staff accommodation for teachers must be provided within the campus premises
- The transport facilities for students may be provided for their study tours and other day to day needs.

On the basis of the inspection/evaluation, the team recommends Accreditation rating of the Degree Programs of Institute of Biotechnology & Genetic Engineering (IBGE), Khyber Pakhtunkhwa Agricultural University Pakistan in the highest upper band (78%) of “X” category of National Agriculture Education Accreditation Council/HEC.

4.4 Signatures of AIC Members

Name and Designation

Signatures

Prof. Dr. Syed Dilnawaz Ahmad Gardezi (Convener)
Dean, Faculty of Agriculture (UAJ&K)
Rawalakot, Azad Kashmir

Dr. Shahid Masood (Member)
Senior Director/ CSO, IABGR, NARC,
Islamabad

Dated: May 14, 2011

4.5 Comments and Signatures of Chairman

I agree with the observations and recommendations made by the peer team in this report.

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