SUBJECT REVIEW REPORT

DEPARTMENT OF BIOTECHNOLOGY

FACULTY OF AGRICULTURE AND PLANTATION MANAGEMENT

WAYAMBA UNIVERSITY OF SRI LANKA

14th to 16th September 2009

Review Team :

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rsity system of Sri Lanka are required to go through the process of subject review as one of the components of the external quality assurance program carried out in Sri Lankan universities by the quality Assurance and Accreditation Council (QAAC) of the University Grants Commission (UGC). It evaluates the quality of education provided to the main stakeholders, the students, within a specific discipline. It is focused on evaluating the student learning experience, student achievements and the teaching learning process. This exercise shall promote and safeguard public confidence in higher education in Sri Lankan universities as it increases

The subject review process for subject evaluation was carried out following the guidelines set by the Quality Assurance and Accreditation Council of the U.G.C., which include critical analysis of self evaluation report submitted by the Department of study concerned, peer observation of teaching, observation of documents, observation of facilities, and gathering information on activities towards quality assurance through discussions with as many stakeholders as possible. Documents that are observed include, examples of student work, handbooks, student handouts, lesson guides, statistics on student achievements and progress, samples of answer scripts, external examiners reports, peer evaluation reports, student feedback reports, minutes of Departmental committees etc. Peer observation carried out during the review process includes observing teaching both in theory and laboratory classes. The stakeholders with whom the discussions are held include the Head of the Department, members of the academic and non-academic staff, academic administrators, alumni, student counselors, undergraduate students and postgraduate students.
Subject reviews evaluate how teaching-learning process helps in the achievement of intended learning outcomes stipulated in the self evaluation report.

Aspects of the Subject Review

Following eight aspects are evaluated in the subject review process.

1. Curriculum design, content and review
2. Teaching, learning and assessment methods
3. Quality of students including student progress and achievements
4. Extent and use of student feedback, qualitative and quantitative
5. Postgraduate studies
6. Peer observation
7. Skills development
8. Academic guidance and counseling

Review Process

The review team consisted of the following members

1. Prof. (Mrs.) Kshanika Hirimburegama
   (Vice Chancellor, University of Colombo, Professor, Department of Plant Science, University of Colombo)
2. Prof. Sanath Hettiarachi
   (Professor, Department of Botany, University of Ruhuna)
3. Prof. (Mrs.) Sriyani E. Peiris
   Professor, Department of Crop Science, University of Peradeniya)
4. Dr. A. A. Yasaratne Amarasinghe
   (Dean, Faculty of Agricultural Sciences, Senior Lecturer, Department of Export Agriculture, Sabaragamuwa University of Sri Lanka)

l by the Department of Biotechnology was provided to the QAAC of the UGC. The on site review process was 2009.

The first meeting held on the first day of the site visit was a private meeting of the review panel where the Quality Assurance Specialist of the QAAC briefed the review team about the quality assurance process and writing of the review report. After a session of introduction of the reviewers to the Vice Chancellor of the Wayamba University of Sri Lanka, Dean of the Faculty of Agriculture and Plantation management and the Head and the staff of the Department of Biotechnology and *vice versa* by the QAA Specialist Vice Chancellor and the Dean briefly explained how the University, Faculty and the Department developed to the present status. The review team then finalized the agenda for the review visit with Head of the Department, which is given in Annex 1.

The Head of the Department presented in detail the content given in the Self Evaluation Report. The discussion following the presentation was useful in verifying certain matters presented in the SER and to collect certain other relevant information.
During the course of the visit the review team also met with all academic and academic support staff of the Department, Non academic staff, students (all students in 2nd, 3rd and 4th years in different sessions), students who recently completed the degree program, the student counselors, Director Career Guidance Unit, Head and staff of ELTU, Director and other staff of the Computer Unit and Senior Assistant Librarian (Annex 2).

As a requirement of the process the review team also perused a number of relevant documents. It should be noted here that all the necessary documents were provided in an orderly manner. The list of documents observed is given in Annex 3.

Visits to the laboratories, green houses, library, ELTU, Computer Unit were made and the facilities available were examined and responsible person of each unit briefed the review team about the services provided by these units and the difficulties and shortfalls. The list of facilities (infrastructure and equipment) observed is given in Annex 4. It was clear from these visits that all the units are contributing towards making quality Biotechnology graduates.

In addition three lectures and two practical classes were observed by the reviewers and they were able make assessments regarding the facilities available at the lecture theatres and laboratories and features of teaching learning process. Te reviewers also had the opportunity to sit at a session of student presentations by third year students.

On 16th September, a feedback of the findings was given to the Head of the Department and other members of the academic and academic support staff. It is noteworthy mentioning here that the review team encouraged and accepted the presence of academic support staff in this briefing as they form an integral part of the entire process in the absence of sufficient academic staff.

The review team wishes to thank the Dean of the Faculty, the Head and members of the academic and support staff and the present and past students of the Department of Biotechnology for the cooperation and hospitality extended to them throughout the review process. The excellent arrangements made in displaying the documents and allocating time slots for various activities are commendable.

of the review team is prepared after the review visit. In ces and the weaknesses of each aspect reviewed will be highlighted together with some recommendations. Each aspect will also be given a judgment of good, satisfactory or unsatisfactory. The draft report will be sent to the Department and the feedback will be obtained. If there is any disagreement with any judgment, it would be resolved by the QAAC through discussion. The judgment will be submitted to the Standing Committee on Quality Assurance of the UGC for approval. After its approval, the report will be published in the QAAC website, www.qaacouncil.lk. The Department has to take action to improve the quality of the aspects that receive a judgment of unsatisfactory within six months of approving the judgments by the Standing Committee on Quality Assurance of the UGC.

2. BRIEF HISTORY OF THE UNIVERSITY, FACULTY AND THE DEPARTMENT

The Wayamba Campus of the Rajarata University of Sri Lanka was established on the recommendation of a Committee appointed by the Hon. Minister of Education and Higher Education Richard Pathiranna on 22nd December 1994 to report on the status of Affiliated University Colleges. On the recommendation of the above Committee, which was chaired by Prof. Wishva Warnapala (the Deputy Minister of Education & Higher Education), the nine Affiliated University Colleges spread out in various provinces of the country were merged to form two National Universities, namely the ñRajarata University of Sri Lankaò and ñSabaragamuwa University of Sri Lankaò on 07th November 1996.

The Affiliated University College of the North Western province, which consisted of two academic sections, i.e. ñHome Science and Nutritionò and the ñAgricultureò and originally affiliated to the University of Kelaniya and University of Peradeniya, respectively, were merged to form the Wayamba Campus (established in terms of the provision of the Sections 18 and 47 (1) of the University Act. No 16 of 1978 and Campus Board Ordinance No 3 of 1995). As provided in the Act referred to above, two Faculties were set up to form the Wayamba Campus, namely the ñFaculty of Agricultural Sciencesò and the ñFaculty of Applied Sciencesò, each with three Departments of Study. The Faculty of Agricultural Sciences constituted the Departments of Plantation Management, Horticultural Sciences and Food Technology and Agricultural Engineering, while the Faculty of Applied Sciences consisted of the Departments of Mathematical Sciences, Industrial Management and Computer Studies, Nutrition and Community Resources Management.

A committee was appointed in 1999 by the government in power to make recommendations to upgrade the Wayamba Campus to a fully-fledged University. Based on the recommendations of this committee, the ñWayamba University of Sri Lankaò was established in August 1999 with four Faculties, namely: (1) Faculty of Agriculture and Plantation Management; (2) Faculty of Applied Sciences (3) Faculty of Business Studies and Finance, and (4) Faculty of Livestock, Fisheries and Nutrition.

To the present day agriculturist the knowledge and hands on experience in biotechnology has become important to make use of the new biotechnological tools to improve the agricultural productivity amidst the challenges caused by environmental degradation, water, land and food scarcity, resources and energy crisis. Realizing this need, Department of Biotechnology was established in the Faculty of Agriculture and Plantation Management with the onset of

the Department of Food Science which later was estock Fisheries and Nutrition.

The department activity was started in 2001 with the recruitment of two probationary lecturers with M.Sc. postgraduate qualification and, at that time there was no any physical resources belong to the department and no even a single non academic member in the department. The Dean of the faculty was acting for the Head post during the initial time and guided all the activities related to the designing of the curriculum and the construction of a Laboratory. DBT was improving gradually from zero resources to some extent with human resources, laboratory, furniture, instruments and chemicals. Till 2004, the DBT offered three common coursers annually. Associate professor was recruited to the department with the arrival of specializing students in 2004. Since 2004 five specialization batches have been taken to the department out of which three have completed the specialization cycles successfully. Despite the severe imbalance in both academic and non academic cadres during this period the department was able to deliver its services to the students mainly with the help of the academic supporting staff, visiting lecturers and very close collaborative links with private and public biotech Centers and Institutes.

In the first two years of the degree program, three common courses; Basic Chemistry, Introduction to Biotechnology and Molecular Biology are introduced from the DBT in order to provide basic knowledge in Chemistry, Genetics, Recombinant DNA-Technology, Cell Biology, Tissue Culture, Biochemistry and Immunology, gradually by directing the students towards applications of each area. From the 3rd year onwards, the students who specialize in biotechnology get an exposure in various subjects to get scientific knowledge related to rather advance level of molecular and cell biology and plant and industrial biotechnology. The unique feature of the faculty and the department curriculum is the opportunities given to the students for research and extensive in-plant raining. In the second semester of their 3 rd year, students are directed to work on a Research Project related to biotechnology. This work is presented annually in the ñ*Agriculture Research Symposium*ò (AGRES) of the FAPM and full papers are published. By now, the DBT has successfully contributed to 4 AGRES Symposia which were held from 2004 to 2008. When the students come to the second semester of 4th year, students get trained for 6 months in a private sector firm or government institute as the in-plant training component of the degree program. This has become a great opportunity for the students to improve their technical and soft skills in a real working environment. Students Specialized in biotechnology will fit into diverse fields of science and have the capability of capturing the jobs in any scientific field in life science. They have special opportunities to continue postgraduate studies under biotechnology related fields in both local and overseas universities.

3. AIMS AND LEARNING OUTCOMES

3.1. Aims

1. To provide sound theoretical and practical knowledge in biotechnology to undergraduates, through the core and specialization courses to produce innovative skilled manpower for agriculture and other biotechnology related fields.
2. To train students in problem solving through research by developing their skills in problem identification, selection of methodologies, data analysis, scientific writing and data presentation.

and attitudes of the students.
higher studies in biotechnology.
to promote links with private and public enterprises to find solutions through research to meet the necessary requirements of the agricultural and industrial sectors.
6. To disseminate the knowledge of biotechnology to the society through awareness programs
7. To enhance the professional orientation of undergraduates via having links with professional bodies in the field of biotechnology.

3.2. Learning Outcomes

On the successful completion of the course modules offered by the DBT, the students would be able

1. to understand and assess the potentials and limitations of the application of biotechnology in development.
2. to obtain wider knowledge with conceptual understanding in major areas of biotechnological applications
3. to obtain the basic technical skills needed in application of biotechnology and research.
4. to obtain the research and transferable skills of biotechnology
5. to obtain soft skills, interpersonal skills and problem solving skills
6. to participate in reducing the technology gap by disseminating scientific information, increasing public awareness on the use of biotechnology in development.

Program Details

The semester wise break down of the number of credits of the four year B.Sc. (Agriculture) degree programme and the contribution of the biotechnology department through core and specialized courses are shown in the Table below. The biotechnology specializing students earn 37.2% of their credit requirement from the specialized courses while the rest of credit requirement 62.8% is earned from the other three departments and units viz; Departments of Plantation Management, Agribusiness Management, Horticulture and Landscape Gardening, and Computer unit. English unit offers two non credited courses for which pass mark grade is required during 1st and 2nd years of the programme.

Number of credits offered by the FAPM and DBT:

Academic Year / Semester	**FAPM**	**DBT**
CORE MODULE		
Year 1 ï Semester 1	24	4
Year 1 ï Semester 2	23	3
Year 2 ï Semester 1	24	0
Year 2 ï Semester 2	24	4
Sub Total	***95***	***11***
SPECIALIZATION		
Year 3 ï Semester 1	25	14
Year 3 ï Semester 2	13	7
Year 4 ï Semester 1	26*	21*
Year 4 ï Semester 2	10**	10**
Sub Total	***74***	***52***
Total	**169**	**63**

4. FINDINGS OF THE REVIEW TEAM

It was evident from the beginning of the review process that the University, the Faculty and the Department have very good leadership offered by the Vice Chancellor, Dean and Head of the Department. The present Dean is an eminent scientist in Sri Lanka who is also providing the guidance to Departmental activities as a member of the same Department and also as the only academic staff member at the inception. The present Head of the Department is also very active and efficient is very well supported by the other permanent academic staff member available at present and all the support staff. Considering the young age of the Department and all the constraints including shortages of staff, laboratory and other infrastructure facilities and space, the progress made is commendable. The present students and those who completed the Degree program are very positive minded and showed their loyalty to the Faculty.

4.1. Curriculum Design, Content and Review

The Department of Biotechnology (DBT) is the latest addition to the Agriculture and Plantation Management faculty. In the first and second semesters of the first year and second semester of the second year DBT offers Basic Chemistry, Introduction to Biotechnology and Molecular biology, respectively as its contribution to the core programme of the faculty curriculum. These courses provide knowledge enough to introduce biotechnology to all agriculture degree seeking students in the faculty. Also this knowledge gives an opportunity to arouse enthusiasm in those who want to study biotechnology further. The biotechnology subjects included in the 3rd and 4th year curriculum meet the requirement of the specialization at its maximum. The curriculum is comprised with subjects that provide the knowledge of general principles and practical applications. The contents of the subjects are relevant and the review team felt that students have an appreciable amount of knowledge of theory as well as practical in biotechnology.

There has been a minor revision of the course contents etc. and DBT has being implementing the present curriculum from 2005 without any further revision. However, the Curriculum Revision Committee formed by the FAPM in 2007 is active and considering a major curriculum revision for the faculty. The total amount of credits for the B.Sc. agriculture and Plantation Management at present is 170 and the faculty is planning to reduce it to 120/130. The review team also favours this decision and feels that the faculty should get help from the expertise of curriculum development.

The first and second year courses are quiet relevant and give strong foundation required for a graduate in Agriculture in general to all the students in the Faculty and also to the students intending to specialize in biotechnology. However, an emphasis should be given to change the curriculum in the third and fourth years for better organization of the courses with the research project and in plant training. A close scrutiny of the curriculum reveals a considerable amount of repetitions/ overlaps among certain course units. Review team felt that it is better to include only one Plantation course (Plantation Crop Production I) out of two which are included in the present curriculum of the first semester of the third year. Then

mentation can be offered instead of Plantation Crop courses in the second semester and the all four courses rth year can be offered in one semester without affecting the credit number. Then the final year covers only the research project and the in plant training. This arrangement will provide sound practical knowledge to students before starting their Research Projects as well as In Plant Training. The Department is in the process of a curriculum revision with a view of reducing the number of credits. Another objective of the proposed revisions is to offer further specialization within Biotechnology. However this needs careful examination and consultation with curriculum experts and all stakeholders in order to ascertain the level of knowledge and skills required by a holder of a Bachelors Degree.

The students are given the necessary training in proposal writing, planning and carrying out research that are expected from a present day graduate, in research project. The results of the research project students carry out in the third year get published as a full research paper in the proceedings of the symposium (AGRES) held every year in the Faculty. This is a very good practice as students get an opportunity to write research publications as an undergraduate. The report writing is included in In Plant training. In Plant training and research project provide experience in the world of work which prepare the undergraduates for future employment.

Offering English and Information Technology courses which are on going throughout the four year is commendable. The review team felt that both these sections in the faculty help students improve their English as well as IT knowledge. The medium of instruction in the entire programme is English. In addition to offering formal English and IT courses, development of these skills and other skills such as communication skills are also built into certain course units. Such features are having to retrieve information from various sources and to make presentations both in poster and oral forms. Furthermore, English unit makes students get ready for Interviews and help them prepare their resumes.

***In relation to the curriculum design, content and review, the judgment of the team is* GOOD.**

4.2 Teaching, Learning and Assessment Methods

A good guidance is given in the Faculty handbook regarding the credit, assessment of course units, scheme of grading and eligibility criteria. Further information if required shall be provided by Department counselors.

Teaching learning process follows of various different techniques such as conducting lectures and practical classes, video shows, individual and group assignments, directed studies resulting in different forms in studentsô presentations, field visits, in plant training, information retrieval, proposal and report writing, research project, writing and presentation of research findings, etc. Workshops and seminars conducted by the Career guidance unit also assists building confidence among students in learning and applications of the knowledge. Certain extent of e-learning also is in place. Judging by the progress made by the undergraduates and graduates, the techniques used in the process seems to be effective. Lectures are conducted using PowerPoint presentations with concurrent use of the chalk and board. Handouts of lecture outlines and practical exercises are given at or prior to the class for certain courses. It would be further beneficial if handouts are given for all lectures

nt presentations. The lecturers encourage the students to lectures and practical sessions. Practical classes are presence of lectures in charge. Due to the scarcity of lecturers, the Department seeks the assistance of visiting lecturers in conducting the programme. The visiting staff is adequately qualified. A commendable feature is the practice of the Department to take charge of all the course units and only specialized sections are given to external staff. Students are also pleased with the way how the visiting staff works. They also follow the timetable of the Department as far as possible.

Maintaining a master file containing the lecture notes for each course by the Department is considered as a good practice. Weak and needy students are identified and proper guidance is provided by the Department counselor.

Lecture theatres are equipped with multimedia projectors and computers, over head projectors and white/ black boards. Although ceiling fans are fixed and are working, the lecture theatres are too hot for comfortable teaching and learning, especially in the early afternoon. Improvements for the lecture theatres are thus needed, but it was noticeable that the windows that could be easily open and give very good ventilation were closed. The partitioning between adjacent lecture rooms is not adequate as one lecture is disturbed by the noise of the other.

Although the limited number of staff runs the program satisfactorily, more staff is certainly required and the recruitments are needed immediately. The heavy workload is preventing the present staff from being engage in research and institutional and national development activities.

The laboratory space and other faculties and plant house space are grossly inadequate. Due to this limitation, students are working in groups and sometimes students are idling until one group finishes its work. However, the staff has made arrangements to make use of laboratories outside the University to conduct/ demonstrate certain practical classes. Conducting both molecular biology and tissue culture practical sessions in the same laboratory is not appropriate. However, the steps should be taken to strengthen laboratories in the Faculty with space, equipment and laboratory staff in order to conducts at least a major part in house. This is also necessary for advance research in Biotechnology. The space problem may be partially solved when the new building is completed. The non academic staff consists only of a computer application assistant, one labourers (recently promoted to lab attendant) and a labourer on contract.

Students are made to understand the methods of assessments at the beginning of the course. Assessment of theory courses are done by mid semester and end semester examinations. Question papers for levels include MCQs and structured essay and essay type questions. Although MCQs can be accepted as a good method of assessment, the review team felt that such questions may be avoided in the third and forth year as students must be encouraged to express themselves by writing descriptive and analytical answers scientifically.

The papers are both moderated and scrutinized by Faculty Board approved members. While this practice is appreciated, the team proposes to encourage the persons who do moderation and scrutiny to give a report and to take this report into consideration. These reports should be saved for future reference and be discussed in order to make improvements.

g practicals in forms of quizzes, assignments, practical
o in place for certain courses in addition to practical
aminations. In plant training and research projects are assessed continuously starting from proposal writing. Marks are allocated for research project for conduct and performance of the project, research paper and paper presentation at AGRES and for In-plant training for diary, report and presentation. This arrangement is satisfactory.

***In relation to the* teaching, learning and assessment methods, *the judgment of the team is* GOOD.**

4.3 Quality of Students, Student Progress and Achievements

The Department of Biotechnology is in operation since 2001. The first batch of students in Biotechnology specialization was enrolled in 2004. Therefore as at present, three batches of students numbering 36 have graduated from the Biotechnology program in 2006, 2007 and 2008. The 2004/05 batch of students who have completed their course in 2009 will receive their final results very soon.

Quality of students and their progress

The great majority of the students come from schools in the neighboring cities and towns to the University. Other students are mostly from areas like Kandy. Therefore the students have come from similar backgrounds. This probably is a reason for smooth running of the Faculty without disturbance from student unrest.

The students are happy with the degree program and appear to work harmoniously which is important in developing team work. The entire degree program is conducted in English which has built self confidence in students in the usage of this language. Also several courses both in third and fourth years have inbuilt individual presentations that allow them to speak in front of their batch. A gradual development of student maturity and self-confidence was observed. This was very clearly observed where final year students and the batch of students who recently completed their program showed more maturity and competency in English than the third years.

Even though students complained about the heavy workload in the first year, this assists strength development that makes the graduate different from others. Therefore, the first year it appears to contribute positively towards their competency development. However, this also has numerous drawbacks such as students not involving in extracurricular activities such as working in subject related and other societies and outreach activities and participation in sports seems to be minimal. A Biotechnology Society has been newly established and as such not very many activities were observed. It is recommended that more attention is given to sports and other extracurricular activities of students. Inadequacy of facilities for sport is another negatively contributing factor for developing a quality graduate.

Under severe constraints of laboratory space and facilities, the Department is imparting a good practical knowledge. They obtain the services of collaborating laboratories too. In addition the students go on filed visits and industrial visits where they are exposed to contrasting sets of conditions, which help them understand real world problems. Further the In Plant training is a great opportunity for them adapt to world of work. This also enhances their chance of getting employment.

sh Language Teaching Unit also contribute immensely
e students.

Student achievements

The meeting with the batch of students who completed the Degree program recently provided ample evidence to conclude that the students are extremely happy about their progress and achievements. They spoke very highly about the good commendations they received from the persons in-charge at the places where they received their industrial training and conducted their research projects. Majority of the students have gone into their first employment within three months after the completion of the program, both in public and private sectors. Also, many graduates register for higher degrees, mostly at PGIA for Masters Programs. One student is reading for Ph.D. in USA. This could also be considered as an achievement as students are geared towards higher learning.

***In relation to the quality of students including student progress and achievements, the judgment of the team is* GOOD.**

4.4 Extent and Use of Student Feedback

The Department is using different approaches to obtain feedback in satisfactory manner. A good mechanism is in place for assessing three different components namely accelerated lecture program, research component and biotechnology specialization program to improve the quality of the courses offered by the Department.

A well formulated questionnaire is administered to obtain feedback from the present students for the purpose of teacher evaluation. The form consists of 25 criteria for obtaining student feedback. The form is distributed at the end of the last lecture of the course unit by the Assistant Registrar of the Faculty. The forms are collected and statistically analyzed and the results are conveyed to the lecturer concerned. Therefore, the process of teacher evaluation is conducted with no interference of the teacher. As such the process is very satisfactory. However, the review team observed that the students have not critically evaluated the teacher as the students are given these forms at the end of the course when they are getting ready to leave the class. Hence, students fill these forms in a rush without concentrating. Another point that was brought about by the students is that the evaluation should be done when about half the lecture series is completed, so that the teacher also has the time to adjust and the students may see an impact of the evaluation they have done. This will boost their confidence in the system and they will do a more serious evaluation. The allotted time for giving their responses should also be increased. The system may be used for each teacher when more than one teacher is involved in one course. Furthermore, the team recommended introducing the same for the practical components of each course.

It is noteworthy that the Department uses a different questionnaire for obtaining the feedback on the course from passed out students. In addition the Department uses information they gather by informal discussions with passed out students and also from the present students at times when they feel free to talk in such occasions such as during field visit. Various other informal sources are also being used to assess the success of the courses. An important feature is appointment of batch representatives and obtaining feedback through informal discussions.

for obtaining student feedback is by way of course
gs take place with students when they are allocated to

***In relation to the extent and use of student feedback, qualitative and quantitative, the judgment of the team is* GOOD.**

4.5. Postgraduate Studies

The staff has been mainly attending to the needs of the undergraduate curriculum and due to lack of manpower the postgraduate studies have not been implemented in high level. However, the most senior member of the academic staff of the department has been involving in postgraduate teaching and administration in both the postgraduate Institutes of University of Peredaniya for many years. He has obtained research grants also in the past. At present, a research grant has been approved by National Research Council however, funds have not being released. A research grant from NSF to identify fragrance gene in rice will receive soon by the Head of the Department. Several graduate students of this department are reading towards Ph.D. and M.Phil. degrees in aboard and in Sri Lanka. The staff members of DBT are planning research projects in collaboration with the Department of Agribusiness Management of the faculty. Also the Higher Degree committee appointed by the Vice Chancellor is preparing a document to implement postgraduate degree programmes to have Ph.D. and M.Phil. students.

The DBT is only five years old and does not have many permanent academic staff members. The manpower available in this department is used very effectively in maximum capacity. Hence it is understandable that the postgraduate studies are in initial stage.

***In relation to the postgraduate studies, the judgment of the team is* UNSATISFACTORY.**

4.6. Peer Observation

A good mechanism is in place. The Department uses a good format to evaluate teachers by peers. The format contains eight criteria such as preparation and planning, class management, teaching and communication techniques, use of resources, monitoring the effectiveness of students learning process, taking responsibility of teaching, sensitivity of studentsô learning process and adaptation of learning strategies. The peer should give qualitative comments for the given criteria. They have used peers for the observation without considering the designation of the peers even though the Head/ Department of Biotechnology has instructed to get the help from the staff members of the same designation or above as peers. The team also observed that the Department uses the format for this purpose, prepared by the Staff Development Unit. However, they have not prepared the format through their IQAA unit and not passed by the University senate.

The temporary Demonstrators are continuously being observed and guided by the senior members.
The question papers are moderated by senior staff members appointed by the Faculty Board and scrutinizing is done by a scrutinizing board comprising of Heads of Departments and Dean.

***In relation to the peer observation, the judgment of the team is* GOOD.**

year one. The following skills are developed during the 1-3 years. These skills are built by courses specially designed for the purpose and by incorporating components into courses in the academic programme.

i. English Language writing and understanding
ii. ICT
iii. Writing skills
iv. Research problem identification
v. Presentation
vi. Independent learning
vii. Group/Team work

The following skills development is observed during 4th year (apart from the above)

i. Skills required to adjust to new situations
ii. Working independently in an industry during In-Plant training
iii. Communication
iv. Organization

Skills development is also achieved through activities of the Career Guidance Unit: Positive attitudes, National development and Personality development.

The right attitude and communication skills were clearly shown in more senior students.

However, it should be noted here many more students than at present would take part in sport activities if the sports facilities are improved. It should be further stressed that more time should be allocated for activities in societies in the University and to engage in outreach activities. Another point worth mentioning is that the review team very strongly felt that at least a few graduates should develop into entrepreneurs as this degree programme is very suitable for undertaking such a challenge. Therefore more emphasis should be given to develop entrepreneurship skills.

***In relation to the skills development, the judgment of the team is* GOOD.**

4.8. Academic guidance and counseling

The orientation programme appears to provide the necessary advice, guidance and counseling to the new entrants. The student handbook provided on the first day of the arrival of students provides accurate and clear information regarding the academic programme and all other essential information. All academics are appointed as academic advisers and a group of students is assigned to each of them in order to assist the students during their orientation period and also throughout their stay in the Faculty. However according the accepted terminology, this service may be renamed as mentoring service and the appointees as mentors. Although students receive adequate academic guidance, the academic counseling has be formalized by appointing one academic counselor from each Department specifically deal with problems that may arise regarding the curriculum and selection of course combinations etc.

The career guidance unit of the Wayamba University has been established in this faculty and an academic staff member of the faculty holds the Director post. However, there are four

the each faculty. They have conducted many interesting
s year. One of the most important among these was the
fore starting their In Plant Training.

It is advisable that the unit can organize job fairs for the final year students to help them find jobs further. Also it is better to analyze past students performances and information about their career should be collected and analyzed. Review team also emphasized that the Career Guidance unit can give initiative to form the faculty Alumni Society.

As the DBT is unique in the sense that students are specialized in Biotechnology with a strong background of agriculture, and therefore has a great potential to become good entrepreneurs. However it appeared that students had not realized this. If the Faculty establishes a business incubator/ University-industry cell, this could be used to inculcate entrepreneurship skills among undergraduates.

There is a team of student counselors which comprises of three, of whom one is the Senior Student Counselor. The Senior Student Counselor has had a proper training in counseling and she has been serving the faculty from its inception as a student counselor. She introduces the counselorôs services to the students in the orientation programme and encourages students to seek help whenever required without any hesitation. The Student counselors appoint representatives from each class to solve academic problems. It is also open to any other problems which can be solved through this channel. Student representatives from each year are present in the faculty board and they communicate studentsô common problems which should be discussed at such a meeting.

Though the counselorsô performances in solving studentsô problems are highly appreciable, there has to be a more organized approach to this activity. Hence, the review team suggests that the Senior Student Counselor should represent the entire university and there should be a Deputy or a Coordinator from the each faculty and there should be 2-3 student counselors with the Deputy or the Coordinator. Review team also suggests that there should a separate office room for the counselors to meet students where they can rely on privacy more.

The counselors have prepared a Student Advisors Record book for each student and they have to get the counselors signature upon their meeting. This is especially for academic counseling where past records help counselor as well as the student to decide upon their next applications.

The junior student counselors have not undergone any sort of professional counseling training. Review team suggests that such training is essential and it will be more helpful in solving studentsô problem in a proper way.

***In relation to the academic guidance and counseling, the judgment of the team is* GOOD.**

ing the study visit by the review team, the eight aspects

Aspect Reviewed	Judgment Given
Curriculum Design, Content and Review	Good
Teaching, Learning and Assessment Methods	Good
Quality of Students including Student Progress and Achievements	Good
Extent and Use of Student feedback, Qualitative and Quantitative	Good
Postgraduate Studies	Unsatisfactory
Peer Observation	Good
Skills Development	Good
Academic Guidance and Counseling	Good

5. CONCLUSIONS

The strengths/ good practices and the weaknesses of each of the eight aspects considered in the subject review process are summarized as follows.

1. Curriculum Design, Content and Review

Good Practices/ Strengths:

1. Core courses in first two years give theory and practical knowledge good enough to students who will not be specializing in Biotechnology and adequate knowledge to arouse interest on students want to carry on further for specialization.
2. The core programme as well as the advanced programme comprised with courses which provide theory and practical knowledge expected from a graduate in Agriculture Biotechnology specialization.
3. Publishing a full paper in the symposium from the data generated from the research projects.
4. In plant training at the last semester provides an opportunity for employment soon after graduation.
5. Various formats of courses are available to develop soft skills of students.
6. Availability of English and IT courses for interested students to improve their knowledge.

Weaknesses:

1. Credit requirement is much higher than other agricultures B.Sc. courses.
2. Some courses included with practical are offered after students finish their research projects.

ent Methods

1. Staff, though small in numbers, is dedicated and energetic and understands well the teaching learning process and assessment methods.
2. The new entrants are well informed about the courses available, specialization areas and how the assessments will be done by providing comprehensive students handbook and passing on of necessary information and advice follows thereafter.
3. Variety of techniques is being used for teaching and learning process as well as for assessments.
4. Outside assistance is obtained where shortages are identified within the Faculty for eg. expertise, laboratory space and facilities.
5. A master file containing lecture notes of all courses is maintained by the Department.
6. Facilities available and seating in lecture theatres are adequate.
7. Use of a variety of methods for evaluation is satisfactory.
8. Moderation of question papers and scrutiny of answer scripts are in place.

Weaknesses:

1. There is a severe shortage of both academic and nonacademic staff, space and laboratory facilities were observed.
2. Although lecture theatres are sufficiently equipped and seating and lighting etc. are adequate, the environment has to be improved to reduce the heat and the noise from adjoining lecture theatres.
3. The space and facilities of the laboratories are insufficient. The conduct of tissue culture and molecular biology practical in the same laboratory is unsatisfactory. However it should be noted that the Department is doing the best under all the constraints.
4. Use of MSQs in examinations of third year and forth year may not be appropriate.
5. Due to the lack of facilities in house and high credit requirement, certain aims of the programme cannot be reached.

3. Quality of Students, Students Progress and Achievement

Good Practices/ Strengths:

1. The student population seems to be homogeneous in their social activities.
2. Students show responsibility and affection towards the Faculty.
3. Students appear to progress through year by year to confident young scientists.
4. The skills development in students is commendable.
5. The students gain good knowledge and sound practical experience.
6. Graduates find suitable employment within a short period while some others are engaged in higher education.
7. The Career Guidance Unit and ELTU contribute positively for the progress of students.

Weaknesses:

1. Engage in only a few extracurricular activities.

ack

1. A good mechanism is in place.
2. The Department uses good formats for the evaluation of different components of the program i.e. accelerated lecture program, research component and biotechnology specialization program and for the evaluation of the teacher.
3. The Department has a good mechanism to analyze the data of student feedback of both course and the teacher
4. Good rapport between staff and students is maintained.
5. Different formal and informal mechanisms are employed to obtain feedback on the course from passed out students.
6. Students are satisfied with the course and the teachers.

Weaknesses:

1. Teacher evaluation is done at the end of the course. Students are not satisfied with this method.
2. Course evaluation is done for theory components, but not for practical components.

5. Postgraduate Studies

Good Practices/ Strengths:

1. BDT is planning to commence postgraduate activities soon.
2. Senior academic staff member has much involvement with postgraduate institutes of other universities.
3. All academic staff members are qualified and enthusiastic.
4. Senior staff member is a well known researcher.

Weaknesses:

1. Postgraduate research activities are not adequate
2. Academic staff involvement for collaborative research with other universities and institute in postgraduate level is not sufficient.

6. Peer Observation

Good Practices/ Strengths:

1. Peer observations are done without considering the designation of the peers.
2. They have a good mechanism to analyze data.
3. After having the observations, there is a mechanism to discuss the strengths and weaknesses of the teachers for their improvements.
4. Question papers are both moderated and scrutinized by senior staff.

Weaknesses:

1. The quality of teaching and learning environment in some lecture halls need improvement for a better assessment of some criteria like class management, teaching and communication techniques, and the effectiveness of students learning process.
2. Comments for each criteria should be written without giving marks according to a scale (This may have some difficulties in analysis).

1. The Degree program is conducted in English language and various components are built in to curriculum strengthen all soft skills required.
2. Career guidance Unit, Computer Unit and ELTU are active.
3. Industrial and field visits and industrial training provide necessary skills to adapt to working environment prevailing outside University.
4. Team work is also encouraged by means of group assignments such as presentations and debates.
5. Skills required for proposal writing, report writing, writing scientific communication and scientific presentation are instilled in industrial training, research project and presentation at AGRES.

Weaknesses:

1. Having too heavy academic workload may negatively affect interpersonal skills as the students hardly find any time for extracurricular activities.
2. Lack of facilities for sport activities is also another concern.

8. Academic Guidance and Counseling

Good Practices/ Strengths:

1. An orientation programme is organized each for new entrants and a comprehensive student handbook is provided.
2. A group of students is assigned to each academic member to guide them throughout the entire undergraduate period.
3. Counselors emphasize their activities and benefits for students in first few days of student life in the university
4. Career Guidance unit help students to adjust to teaching/ learning environment quickly.
5. They also make students learn on coping up with stressful conditions by their well organized workshops.
6. Students are made aware of the environment of In Plant Training and prepare them to adjust successfully..
7. Students have a record book for academic counseling.
8. Student counselors work closely with student representatives, who also have their representation at the Faculty Board.

Weaknesses:

1. No professional training has been given to student counselors other than the Senior Student Counselor.
2. A room for students to have discussions with counselors in maximum privacy is not available.
3. Academic counseling has yet to be formalized.

ent to 120/130

2. To reduce Plantation Crop Production I and II to one course.
3. To minimize repetitions/ overlaps among course units.
4. To offer Biotechnological Instrumentation in the first semester of third year instead of Plantation Crop production II
5. To combine courses in the second semester of third year and first semester of fourth year and offer them in the second semester of third year. This will also meet the requirement of having completed courses inclusive of practical before their Research Projects started. Hence Final year will be only Research Project and In Plant Training.
6. To obtain expertise help to revise curriculum.
7. To consult all stakeholders in deciding specialization area and level of specializations within Biotechnology specialization.
8. To take action by the Department, Faculty, University and the UGC to recruit necessary academic and nonacademic staff for efficient running of the programme.
9. To encourage the students to think how they can contribute to improve the learning environment of the lecture theatres (for eg. a simple thing like opening the windows). It is also important to train them to switch the lights and fans off when they leave.
10. To conduct practical classes in laboratories appropriate for the course. However it is understood that the facilities would be improved with the completion of the new building.
11. To consider not giving MCQs for third year and fourth year.
12. To reduce academic workload by reducing the minimum credit requirement, reducing overlaps and reducing relatively less related courses and to encourage for self learning, extra curricular and outreach activities.
13. To maintain and improve the relationships with outside institutes.
14. To incorporate into the next curriculum revision a mechanism to encourage students to become entrepreneurs in Biotechnology.
15. To reduce academic workload allowing the students engage in more extracurricular activities.
16. To administer the student feedback questionnaire after the completion of about 50% of the course, rather than at the end of the course.
17. To allow sufficient time for responding to questionnaire.
18. To obtain feedback practical component, in-plant training and research project.
19. To obtain research grants from the University Research Funds
20. To apply for research grants from local and foreign donor organization.
21. To have collaborative research for M. Phil. degrees with other universities.
22. May consider improving peer observation by giving comments (qualitative) rather than giving marks.
23. To provide students with entrepreneur training
24. To provide financial assistance and guidance for graduates at least for 3-4 graduates to develop industry-self employment (even after a few years). SME linked to a Department may be developed.
25. Train non-academic staff on laboratory technology.
26. Train academic staff on a course on Entrepreneurship.
27. To have a Senior Student Counselor to represent the entire university and to have a Deputy or a Coordinator from the each faculty.
28. To provide proper training programmes for Junior Student Counselors and academic staff.

ear students.

ing as mentoring service and to establish a formal

31. Help students to form an Alumni Association of the Faculty.
32. To establish a business incubator/ University-industry cell.

VIEW VISIT

14th September 2009 (Monday)	
8.30 ï 9.00 am	Private meeting of the Review panel with QAA Representative
9.00 ï 9.30 am	Meeting with VC/WUSL, Dean/FAPM and Head/Dept. of BT
9.30 ï 9.45 am	Discuss the Agenda
9.45 ï 10.45 am	Presentation by Head of the Dept. on Self evaluation Report (Tea)
10.45- 11.15 am	Discussion
11.15 ï 11.45 pm	Meeting with 2nd year students
11.45 ï 12.30 pm	Meeting with student counselors
12.30 ï 1.30 pm	Lunch
1.30 ï 2.30 pm	Observing the facilities of Dept. of Biotechnology
2.30 ï 3.00 pm	Observing practical class ï **BT 3136 Plant Tissue Culture & Micro Propagation**
3.00 ï 3.30. 00 pm	Meeting with Academic Staff
3.30 ï 4.00 pm	Meeting with Non-Academic staff
4.00 - 4.30 pm	Meeting with ELT Unit
4.30 ï 5.00 pm	Brief meeting of reviewers
15th September 2009 (Tuesday)	
8.30 ï 09.00 am	Postgraduate Activities
9.00 ï 10.00 am	Observing the Documents
10.00 ï 10.45 am	Meeting with Passed out students (Tea)
10.45 ï 11.15 am	Observing practical class ï **BT 4157Genetic Engineering**
11.15 ï 11.45 am	Visit computer Unit and meet staff
11.45 ï 12.30 pm	Visit to the Library
12.30 ï 1.30 pm	Lunch
1.30 ï 2.00 pm	Observing lecturer ï **BT 3139 Immunity & Disease Diagnostics** ***Conducted by Dr.(Ms.) K Vivehananthan***
2.00 ï 2.30 pm	Meeting with 4th year students
2.30 ï 3.00 pm	Meeting with 3rd year students
3.00 ï 3.30 pm	Observing lecturer ï **BT 3137 Cell Biology** ***Conducted by Dr. (Ms.)NS Kottearachchi***
3.30 ï 4.00 pm	Tea
4.00 ï 4.30 pm	Meeting with Director, Career Guidance Unit
4.30 ï 5.00 pm	Brief meeting of reviewers
16th September 2009 (Wednesday)	
9.00 ï 9.30 am	Observing lecturer - **BT 4157Genetic Engineering** ***Conducted by Prof. D.P.S.T.G. Attanayaka***
9.30 ï 10.00 am	Observing presentations - **BT 3137 Cell Biology**
10.00 ï 11.00 am	Reviewers Private discussion (Tea)
11.00 ï 12.00 pm	Meeting with Head and Staff of Dept. BT
12.00 ï 1.00 pm	Lunch
1.00 ï 4.00 pm	Report Writing

Dean of the Faculty of Agriculture and Plantation Management
Head of the Department of Biotechnology
Permanent academic staff of the Department (Three including the Dean and HoD)
Temporary staff of the Department (temp. Assit. Lecturer and Demonstrators)
Present students (Second, Third and Fourth year, all students in different sessions)
Passed out students
Non-academic staff of the Department (CAA, Lab attendant, Labourer on contract)
Senior Assistant Librarian of Library at Makandura Premises
Student Counselors of the Faculty
Director Career Guidance Unit
Director of the Staff Development Centre
Coordinator and other staff of the Computer Unit
Head and staff of ELTU Unit

Annex 3. DOCUMENTS OBSERVED

Course material prepared by lecturers
Course outline
Research proposals, drafts, evaluation
Proceedings - Agriculture Research Symposium (AGRES)
In plant training ï Proposals, in plant training diary, evaluation
CDôs of Presentations (Students)
Question papers, moderated with marking schemes
Time tables - Academic and examination
Samples of results sheets
Students Hand Books
Teacher Evaluation ï Students feedback forms and reports after data analysis
Minutes of department meetings
Documents related to curriculum revision
Course curriculum
Publications - Staff and students
General publications
External degree programme - Course materials
Biotechnology Society (BitSoc) - Newsletter
Academic guidance & counseling
Out reach activities
Laboratory & field visits
Peer Observation ï Forms and reports
SDC activity for temporary staff
Staff members work load
Faculty Talk
Senate higher degrees committee
Employability details of passed out students
Studentsô attendance sheets

D

Lecture halls
Laboratories ï Molecular Biology and Tissue Culture, Microbiology, Basic Chemistry
Staff-Student Computer Laboratory
English Language Teaching Unit
Library ï Makandura premises
Plant houses

Equipment
Distilled water plants
Water baths
Laminar flow cabinets
Autoclave
Incubator
Refrigerators and freezers
Spectrophotometer
pH meter
Fume hood
Computers
Printers
Scanner
Multimedia projectors
Overhead projectors

Annex 5. TEACHING SESSIONS OBSERVED

Two lectures from the 3rd year and one lecture from 4th year.
One laboratory class each from the 3rd year and 4th year.
A laboratory class of the 2nd year General Degree
A student presentation session of a 3rd year directed study.