SELF ASSESSMENT REPORT

Department of Plant Breeding & Genetics

PIR MEHR ALI SHAH ARID AGRICULTURE UNIVERSITY RAWALPINDI

Program Team

Coordinator	**Dr. M. Kausar Nawaz Shah**
Member	**Dr. Zahid Akram**
Member	**Dr. Ghulam Shabbir**
Reporting Period:	**2010-2012**

Programme

M.Sc. (Hons.) Agriculture

Plant Breeding and Genetics

Self Assessment Report of Department of Plant Breeding and Genetics
Pir Mehr Ali Shah Arid Agriculture University Rawalpindi

INTRODUCTION

Plant Breeding and Genetics is one of the leading departments in the Faculty of Crop and Food Sciences. M.Sc. (Hons) programme was started in 1996 and since then **98** students have earned this degree from this department. As a result of gradual development at the department, the department has built very strong and productive links with researchers and organizations at national and international level.

Criterion 1: PROGRAM MISSION, OBJECTIVES AND OUTCOMES

Standard 1-1: Mission statement of Plant Breeding and Genetics Program

To help students excel in the discipline of Plant Breeding and Genetics by providing an excellent platform through high quality teaching and research. Providing basic and applied education to postgraduate students and imparting professional training through use of modern techniques for crop improvement and related research methodologies.

Program Objectives

1. To motivate and guide the postgraduate students to achieve professional excellence.
2. To inculcate the research thrust among students, to enable them to plan and execute their research projects independently.
3. To apprise students regarding latest research progress in the field of Plant Breeding and Genetics, and guide them to make use of knowledge for achieving research goals.
4. To help students plan their research projects according to the current issues of crops.

- **Main Elements of strategic plan to achieve program mission and objectives**

    1. Exploitation of the experience and vision gathered from international reviews, literature, symposia etc. for the development of a quality teaching system.
    2. Design and improvement of curricula by the introduction of core and elective subjects in specialized areas and study trips.
    3. Establishment of laboratories with latest equipments to impart hand-on training to students and researchers, depending upon the available resources.
    4. Research of post graduate students with thesis write-up.
    5. Publication of research papers in reputed National and International Journals preferably with impact factor.
    6. Implementation of research projects funded by the Universities and other donor agencies.

Program Outcomes

1. The department has produced so far about 98 M.Sc (Hons) graduates since initiation of post graduate program.
2. The research facilities developed at different laboratories and green houses have helped students carry out their research activities more efficiently and target oriented.
3. The students have been trained to conduct research projects regarding mode of inheritance of various traits and genetic variability using conventional and non-conventional approaches for improvement in different crops of the region.
4. Research work is in progress for the development of new crop varieties of wheat possessing desirable traits of economic importance.

Standard 1-2: Program Outcomes

Program Objectives	1	2	3	4
1	+++	++	+++	++
2	++	++	+	++
3	+++	+++	+	+++
4	++	+++	++	+++

\+ = moderately satisfactory
++ = Satisfactory
+++ = High satisfactory

Surveys

The students of the Department of Plant Breeding and Genetics possess the ability to apply their knowledge for solving different crop related issues using scientific skills. Students have also been equipped with the relevant knowledge for use of modern tools and techniques for crop improvement program and to foresee future emerging needs.

Proforma 1: Students Course Evaluation Questionnaire

PBG 702 Cytogenetics of Crop Plants

Perusal of graphical Proforma revealed that 40% students strongly agreed to the questions asked regarding course objectives, participation, learning outcomes, L&T methods, course delivery, pace of course, assessments etc of the course in proforma 1. However, 35% students agreed to the other questions. About 20% students were uncertain and/or disagreed to the various aspects inquired in the proforma.

PBG-703 Biometrical Genetics

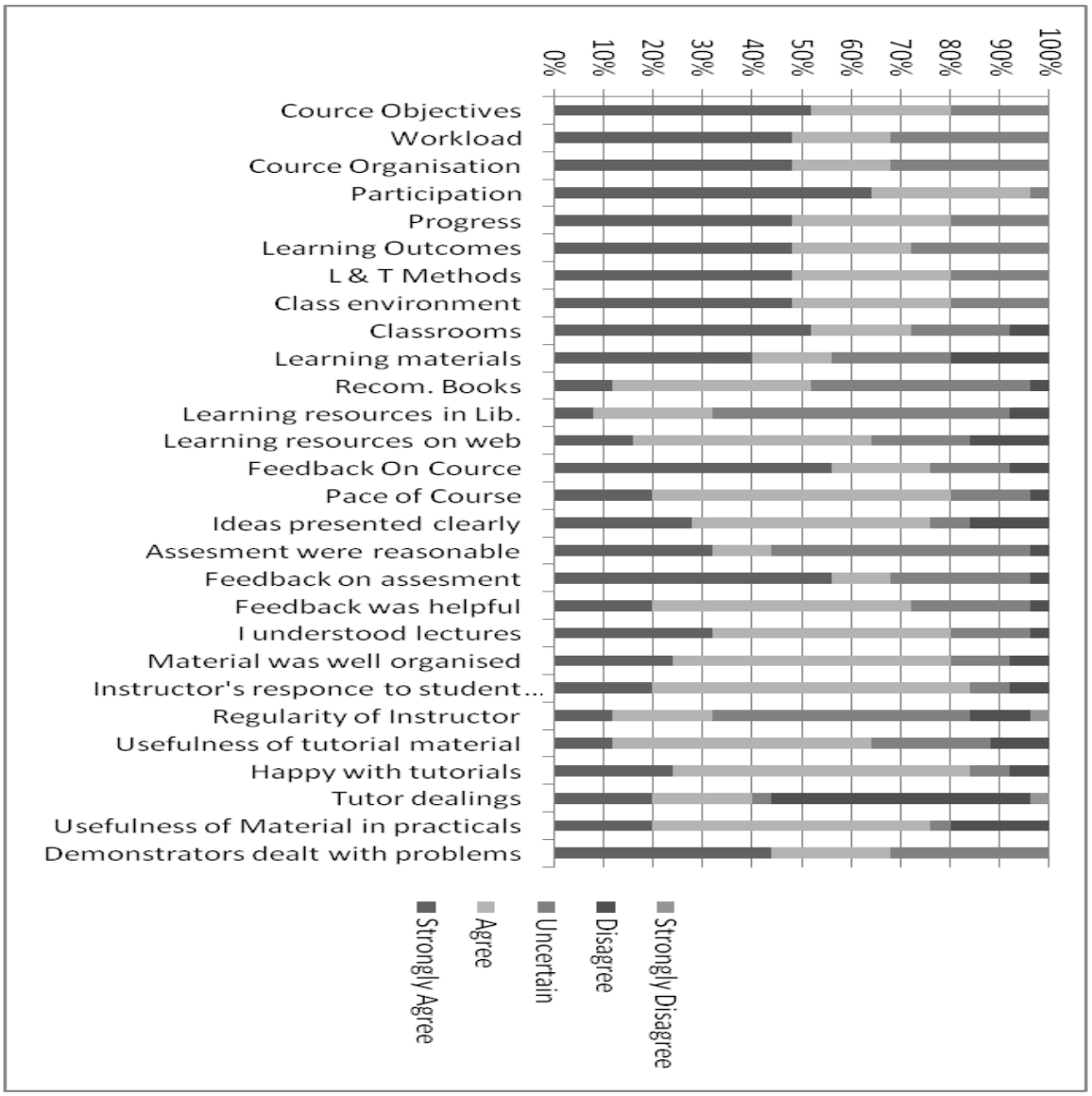
About 40% of the students responded in strong agreement regarding questions asked in the proforma pertaining to various aspects of course like course objectives, participation, learning outcomes, L&T methods, course delivery, pace of course, assessments, ideas presented etc. Similar number of students showed general agreement to the questions asked and were uncertain to the various aspects about the course.

PBG-704 Advanced Methods in Plant Breeding

About 40% students strongly agreed to the questions asked regarding course objectives, course organization, teaching methodology, learning outcomes, class rooms, course delivery, and assessments etc of the course in proforma 1. However, 35% students agreed to the questions asked. Whereas only 20% students were uncertain.

PBG-705 Mutation Breeding

Perusal of graphic proforma revealed that about 30% students strongly agreed to the questionnaire asked regarding course objectives, course organization, participation, teaching methodology, learning outcomes, class rooms, course delivery and assessment etc. General agreement was shown by 30% whereas same proportion of students were uncertain while responding to the various aspects of course evaluation proforma.

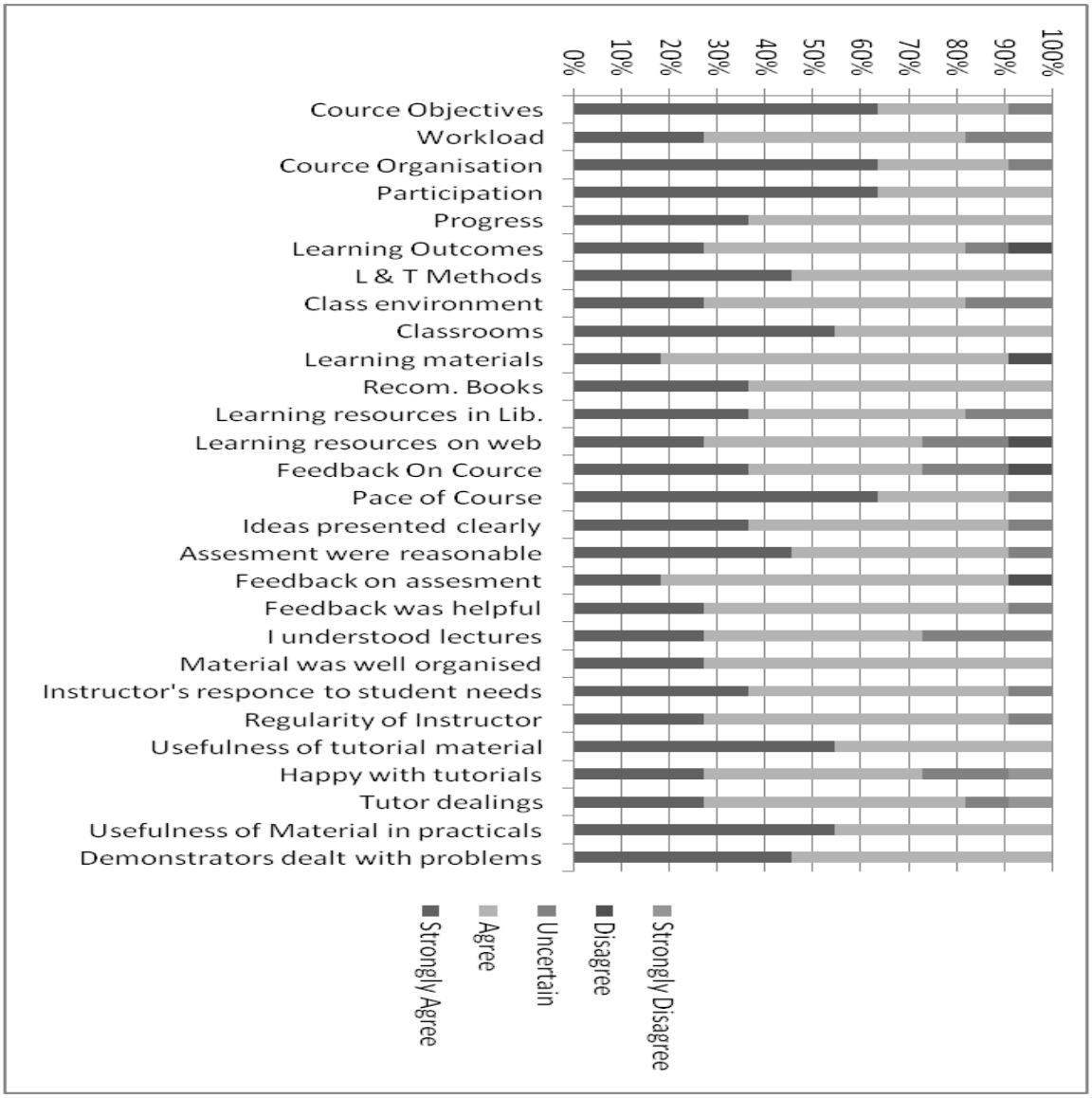


PBG-707 Advanced Genetics

An aggregate analysis of the Proforma showed that about 30% students strongly agreed to the questions asked regarding course contents, participation, class environment, assessments etc of the course in proforma 1. However, 35% students agreed to the questions asked. Around 30% students were uncertain to the various aspects inquired in the proforma.

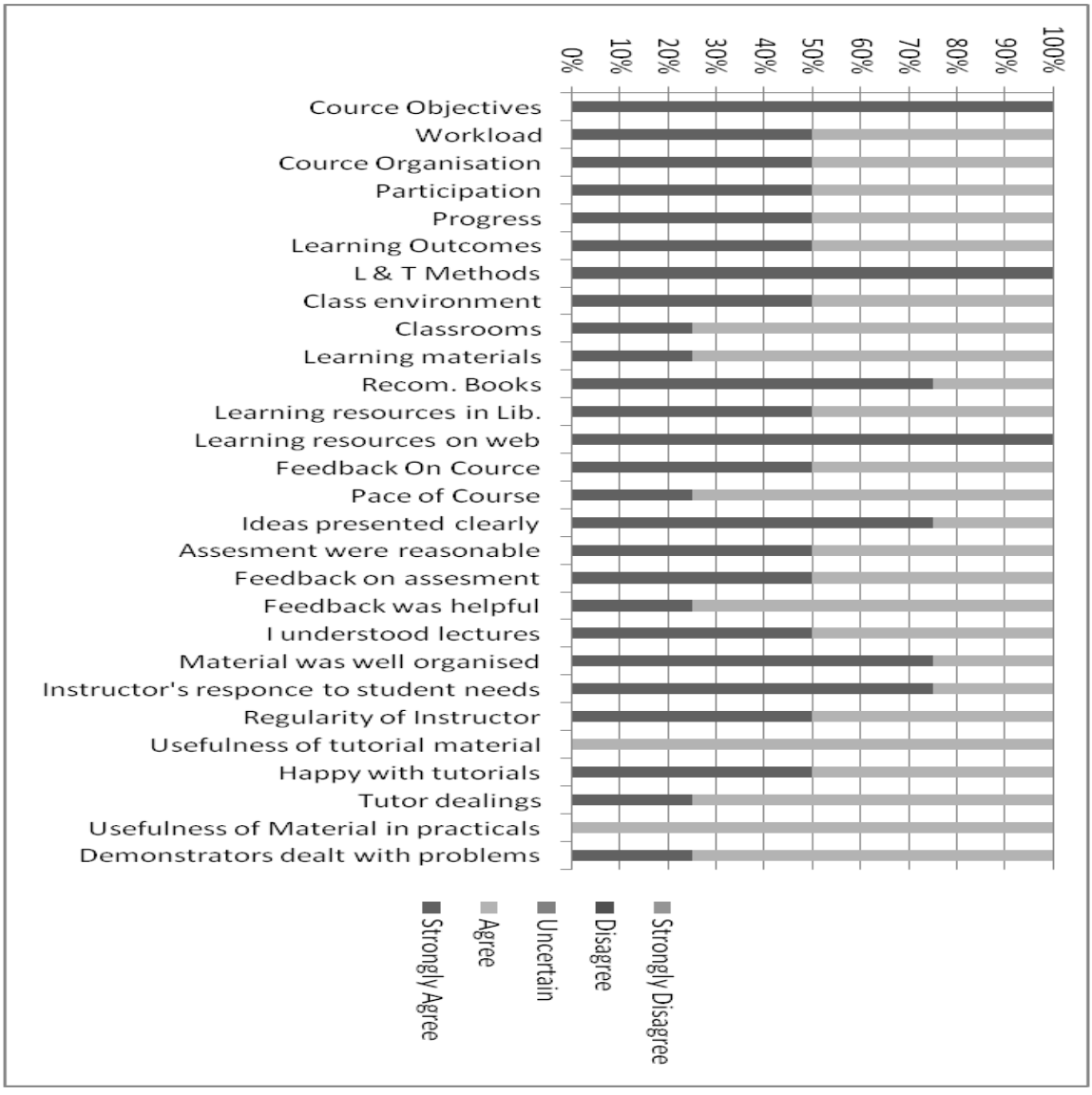
PBG-708 Genetic Engineering and Biotechnology

About 40% students strongly agreed to the questions asked regarding course objectives, course organization, participation, pace of course, usefulness of material etc of the course in proforma 1. However, 35% students agreed to the questions asked. Small proportion of students were uncertain and/or disagreed to the various aspects inquired in the proforma.



PBG-710 Evolution of Field Crops-1

About 35% students strongly agreed to the questions asked regarding course objectives, L&T methods, course delivery, learning resources, feedback, assessments, organization of materials etc of the course in proforma 1. However, 30% students agreed to the other questions asked. A small proportion of students were uncertain and disagreed to the various aspects inquired in the proforma.



PBG-714 Genetics of Plant Disease and Insect Resistance

A perusal of the graphic analysis showed that about 35% students strongly agreed to the questions asked regarding course objectives, participation, class environment and assessment etc of the course in proforma 1. However, similar number of students agreed and were uncertain to the various aspects inquired in the proforma.

PROGRAM OBJECTIVES ASSSESSMENT

The details are provided in table as follows

Table: Program Objectives Measurement

S. #	Objective	How Measured	When Measured	Improvement Identified	Improvement made
1	To motivate and guide the graduate students of the department for their professional excellence.	On the basis of students feed back	At the time of students evaluation	Some laboratory facilities needed improvement	Establishment of labs with latest equipments
2	To inculcate the research interest in the students so that they can plan and execute their research plans independently.	Through students surveys and research planning experiences	At the start of students admission	Related subjects to be studied	Enhancement of knowledge and vision
3	To apprise students about latest research progress in the field of Plant Breeding and Genetics and guide them make use of this knowledge for achieving their research goals.	On the basis of national and local demands of the farming community	At the time of initiation of the research programme	Thorough screening and the evaluation of germplasm for its subsequent hybridization	Different promising genotypes have been identified possessing desirable traits.
4.	To help students plan their research projects according to the current and critical issues of their respective crops ultimately leading towards production of crop varieties of economical significance.	On the basis of assessment of post graduate students and alumni of the department.	At the time of completion of each academic year.	Planning and execution of research.	Most of the students have gained related technical skills in the respective area of research.

Standard 1-3: Results of program assessment and extent to which they are used to improve the program must be documented.

Results are explained in the report.

Actions Taken Based on Results of Periodic Assessment

Assessment has been made for the third time in the department and subsequently actions are underway accordingly to improve the deficiencies identified.

Major Future Program Improvement Plans

- Augmentation of facilities for crop improvement programme (green house, rain shelters, and tunnels etc for controlled environment studies) and students experiments.
- More emphasis will be given to problem oriented research initiatives with special focus on field crop problems of rainfed areas.

Strength of the Program

Highly qualified academic staff with vast knowledge of local agriculture production system is available. Most of the faculty members have foreign degrees with Post-Doc Fellowships and are experts in their fields. Faculty has rich experience of carrying out research projects at national level and are capable of handling the problems faced by the post-graduate students.

Weakness identified in the Program

1. There is a need for regular short term local/foreign training to faculty members.
2. Non- availability of continuous power supply in the labs of department and glass house.
3. Non-availability regarding housing facility for teaching and allied staff at campus.

Standard 1-4: **Quantitative Assessment of the Department (Last three years)**

Sr. #	Particular	Number	Remarks
i	M.Sc. degree awarded	48	3 students joined Ph.D program; the remaining got employment
ii	Post-Doc fellowship	1	South Korea
iii	Students: Faculty ratio	10:1	Fulfils HEC criteria
iv	Average grade point	3	Fulfils HEC criteria
v	Average Time Taken for Post graduate	2 Years	Fulfils HEC criteria

Present performance measures for research activities

Faculty	Journal, Publications (National and International)	Conference Publications (Proceedings Abstract)	Projects
Prof. Dr. Muhammad Munir	9	2	-
Dr. M. Kausar Nawaz Shah	6	2	1
Mr. Nasir M Minhas	5	-	-
Dr. Zahid Akram	12	1	-
Dr. Ghulam Shabbir	6	1	1
Dr. Talat Mahmood	1	-	-
Mr. Mahmood ul Hassan	1	-	-
Dr. Saad Imran Malik	-	-	1
Dr. Munir Ahmed	1	-	-

Community Services By the Department

- Guidance of students from the other departments with respect to their research projects.
- Advisory services to the farmers regarding crop related issues.

Faculty Satisfaction Regarding the Administrative Services

- The department maintains a ratio of 3:1 for the academic (technical) and administrative non-technical staff. This ratio fulfils the standard set by HEC.
- Administrative meetings (departmental, university and academic council) are attended. In general, two meetings are held each month.
- Proper records of each individual, students thesis etc. are maintained.

Program outcomes	Objectives: Plant Breeding and Genetics, Development, Teaching and Research		
	Nos.	Criterion	Characteristics
M.Sc. (Hons)	24 Post-graduate students /year	Research work and presentation of thesis, local evaluator	Problem oriented research on students interest but in accordance with subject

The program outcomes fully support program objectives mentioned above. Outcomes are based on actual details obtained from departmental records.

Criterion 2. CURRICULUM DESIGN AND ORGANIZATION

A) Title of degree program:

Presently these degree programs are organized by the department

- **M.Sc. (Hons) Agric.** Completion of course work and submission of thesis, evaluation and examination by an external examiner and supervisory committee

B) Definition of Credit Hour:

A student must complete a definite number of credit hours. One credit hour is one theory lecture or two hours laboratory (practical) / week.

C) Degree Plan:

List of course and elective courses is attached:

- The course is relevant to the degree program
- It meets the material and international requirements for the degree
- Adequate facilities are available in the department
- The program contents meet the program objectives as highlighted and provided by the Higher Education Commission, Government of Pakistan.

Degree	Pre-requisites
M.Sc. (Hons) Agric. Plant Breeding and Genetics	B.Sc. (Hons) Agric. with Plant Breeding and Genetics as major subject, GAT General conducted by NTS.

D. For each course in the program that can be completed for credit

Specifying the following:

- Course title
- Course objectives and outcome
- Catalogue description
- Text book and reference
- Syllabus breakdown lectures
- Computer usage: Computer and internet facility is available to all the faculty members to update their knowledge regarding courses being taught, up-dating of research methodologies, documentation of references etc. This facility is also available to students which facilitates them complete their assignments, presentations, data tabulation, data analysis etc.
- Laboratory facilities are available to the students for their practicals given in the curricula. Post-graduate students work for their theses research in the laboratories, basic equipment, material and chemicals are provided as per budget availability.
    - **For each course in the program that can be counted for credit provide 1-2 pages specifying the following:**
        - Computer usage: Internet facility is used by faculty members to up date their knowledge regarding each course and it is also used by students to complete their assignments.
        - Laboratories: For conducting practical given in the curricula the departmental laboratories are used as per requirements.

Standard 2-1: Courses Versus Program Outcome

Group of Courses	Program outcomes				
	1	2	3	4	5
Plant Breeding PBG-701, PBG-704, PBG-705, PBG-706, PBG-709, PBG-710	+	++	+ +	++	+ +
Genetics PBG-703, PBG-707	++	+	+ + +	++	+
Cytogenetics PBG-702	++	+	++	+ +	+
Biotechnology PBG-708	+	+ ++	+	+	+ ++

+ = Relevant
+ + = Relevant satisfactory
+ + + = Very relevant satisfactory

Standard 2-2: The curriculum must be consistent and supports the program documented objectives.

Elements	Courses
Theoretical background	PBG-706, PBG-707, PBG-710, PBG-702, PBG-705
Problem analysis	PBG-701, PBG-703
Solution Design	PBG-704, PBG-708,

All the courses for degree program were developed by a committee constituted by the Higher Education Commission, Pakistan. The committee consists of experts and learned Professors, subject matter specialists from the Universities and research organization from Pakistan.

Standard 2-3: The curriculum fits very well and satisfies the core requirements for the program, as specified the respective accreditation body.

Standard 2-4: The curriculum satisfies the major requirements for the program as specified by HEC, the respective accreditation body/council.

Standard 2-5: The curriculum satisfies the general arts and professional and other discipline required for the program according to demands and requirements set by the Higher Education Commission.

Standard 2-6: Information technology component of the curriculum has been integrated throughout the degree program.

While the curriculum was prepared, all aspects of information technology were considered and after a critical analysis, relevant aspects were integrated into the program.

Standard 2-7: Oral and written communication skills of the students have been developed.

- Two seminars each of one credit hour is compulsory for the Post-graduate students.
- Assignments are given to M.Sc. (Hons) Agric. on specific titles (part of the course) which are presented orally and submitted in the form of written report (assignments) by the students which have increased their oral and written communication skills.

Criterion 3: LABORATORIES AND COMPUTER FACILITIES

- Laboratory Title: Plant Breeding and Genetics Laboratories for the students.
- Location and Area: Faculty of Agriculture and Food Sciences, B-Block, 1st and 2nd Floor, Main Campus
- Objectives: Laboratories are used for:
  Practical demonstrations to post graduate students in their major courses. Research work for the post-graduate students.Used for implementing the projects funded by the University, HEC, PSF, PARC and other agencies.
  Software available if applicable Nil

Major apparatus, equipments: GDS, PCR, DNA Hybridization machine, Double distillation apparatus, Centrifuge, Incubator, Autoclave etc.

Safety Regulations: Safety measures are not adequately available against fire, minor hazards and accidents, injuries.

Standard 3-1: Laboratory manuals / documentation / instruction for experiments.

Hand outs are given to the students to conduct various lab experiments.

Shortcomings in the laboratories:

- Labs are lacking proper working environment due to non-availability of uninterrupted power supply.
- Funding for the supply of consumables for regular working of laboratories.

Standard 3-2: Support personal for maintenance of laboratory

Laboratories are maintained by:

- One laboratory assistant.

Standard 3-3: The University computing infrastructure and facilities

- Proper audio visual facilities in lecture rooms should be installed.
- Computer labs should be established in each department to facilitate students.

Criterion 4: STUDENT SUPPORT AND ADVISING

Standard 4-1: Courses must be offered with sufficient frequency and number for students to complete the program in a timely manner.

- Courses are given as per strategy of HEC.
- At postgraduate level courses are offered according to the availability of the teachers.
- Elective courses are offered as per policy of HEC and University.

Standard 4-2: Courses in the major must be structured to ensure effective interaction between students, faculty and teaching assistants.

- Courses are structured and decided in the board of study meeting.
- Decided at the commencement of the semester and in the faculty members interact frequently among themselves and with students. Students are welcome to ask question in class and even after the class.
- Emphasis is always given for an effective interaction between each section.

Standard 4-3: Guidance on how to complete the program must be available to all students and access to qualified advising must be available to make course decisions and career choice.

- Students are informed about the program requirement through the office of the Chairman of the department.
- Through the personal communication of the teachers with the students.
- Students can contact with relevant teachers whenever they face any professional problem.
- Student can interact with the teachers / scientist in Universities or research organization whenever they need and there is open option for the students to get the membership in the professional societies.

Criterion 5: PROCESS CONTROL

Standard 5-1: The process by which students are admitted to the program must be based on quantities criteria and clearly documented. This process must be periodically evaluated to ensure that it is meeting its objectives.

- The process of admission is well established and followed as per rules and criterion set by University.
- Admission criteria: B.Sc. (Hons) Agri. result.
- GAT (subject) score 50% for admission to M.Sc (Hons)
- It is based on the recommendations of Admission committee.
- Admission criteria are announced each year before the announcement of admissions.

Standard 5-2: The process by which students are registered in the program and monitoring of students progress to ensure timely

completion of the program must be documented this process must be periodically evaluated to ensure that it is meeting its objectives.

- Students are evaluated through Mid, Final and Practical exams and through Assignments.
- Registration is done one for each degree but evaluation is done through the result of each semester. If the students fulfill the criteria of the University they are promoted to the next semester.
- In general, the students are registered on competition basis keeping in view the academic and research standards

Standard 5-3: **Recruitment policy followed by the University is recommended by HEC. Induction of all posts is done as per rule**:

- Posts are advertised in the national newspapers, and the applicants are short listed on the basis of experience, qualification, publications and other qualities / activities as fixed by the University.
- The candidates are interviewed by the University Selection Board and Principal and alternate candidates are selected.
- Selection of candidates is approved by the Syndicate for issuing orders to join within a specified period.
- Induction of new candidates depends upon the number of approved vacancies
- For recruitment standards set by HEC are considered.
- At present, no procedure exists for retaining highly qualified faculty members. However, the revised pay scales structure is reasonable.

Standard 5-4: **The process and procedures used to ensure that teaching and delivery of course material to the students emphasizes active learning and that course learning outcomes are met. The process must be periodically evaluated to ensure that it is meeting its objectives.**

The teaching methods adopted are according to the standards set by HEC. Normally course contents are given to the students and lecture break down is also given so that they may know about the course topics in advance. Recommended books are mentioned in the course contents.

Standard 5-5: **The process that ensures that graduates have completed the requirements of the program must be based on standards, effective and clearly documented procedures. This process must be periodically evaluated to ensure that it is meeting its objectives.**

- According to the examination system of the University which is clearly documented.

The evaluation procedure consists of quizzes, mid and final examinations, assignments, reports and oral presentations.

Grading System
A = 80 %
B = 65-79%
C= 50-64%
D= 40-49%
F= Below 40%

Criterion 6: FACULTY

Standard 6-1: Faculty distribution by program areas

Program area of specialization	Courses in the area and average number of sections per year	Number of faculty members in each area	Number of faculty with Ph.D. degree
Plant Breeding	18	04	04
Genetics	02	02	02
Cytogenetics	02	01	01
Genetic Engineering and Biotechnology	02	02	02
Total	24	09	09

Standard 6-2: **Effective programs for faculty development must be in place.**

- Professional training and availability of adequate research and academic facilities are provided.
- Existing facilities used include mainly internet access which is available through networking system in addition to library facility.

- Effective programs for faculty development was just introduced in the last semester

<u>Standard 6-3:</u> **All faculty members should be motivated and have job satisfaction to excel in their profession.**

- Young faculty members are encouraged by the senior faculty members.

Proforma 5 Faculty Survey

As per proforma No.5, regarding faculty survey filled out by individual faculty members, it is clearly indicated that their satisfaction level and effectiveness is in place to help them progress and excel in their profession. This satisfaction was expressed for different facilities and opportunities available to them at department. Among suggestions, provision of local and foreign trainings was on top to enhance the skills of faculty members in fields of latest emerging technologies in various avenues of science.

Criterion 7: INSTITUTIONAL FACILITIES

Standard 7-1: The institution must have the infrastructure to support new trends in learning such as e-learning.

- Electronic library books and journals are available for learning purpose.
- Insufficient facilities regarding the infrastructure to support new trends in learning.

Standard 7-2: The library must possess an up-to-date technical collection relevant to the program and must be adequately staffed with professional personnel.

- Collection of appropriate technical books is available at the library.
- Recommended books, relevant journals of the programs are available to the students to some extent.

Standard 7-3: Class rooms must be adequately equipped and offices must be adequate to enable faculty to carry out their responsibilities.

- Due to non-availability of class room, classes are taken in the general lecture halls.
- Space limitation is the major constraint in the development and strengthening of the discipline.

Criterion 8: <u>INSTITUTIONAL SUPPORT</u>:

Unfortunately, this aspect is very weak at present.

<u>Standard 8-1:</u> **There must be sufficient support and financial resources to attract and retain high quality faculty and provide the means for them to maintain competence as teachers and scholars.**

- Insufficient secretarial support, technical staff and office equipment.
- Vacant posts should be filled in regularly to improve working efficiency of teaching staff.

<u>Standard 8-2:</u> **There must be an adequate number of high quality graduate students, research assistants and Ph.D. students.**

- Currently, there are 53 graduate students in the department.
- Faculty: graduate students ratio. 1 : 9

<u>Standard 8-3:</u> **Financial resources must be provided to acquire and maintain library holdings, laboratories and computing facilities.**

- At present small departmental library has been established that needs financial assistance for its expansion.
- One computer assistant and five official PCs are available.

Proforma 4 Research Students Progress Review Form

The Proforma 4, was filled in by post graduate students giving details about; when they were admitted to the department, initiation of research and course work details etc. On the basis of survey conducted it was indicated that students are satisfied generally with the level of supervision provided and research facilities available in the department except few problems related to timely availability of chemicals in the labs to conduct their experiments smoothly. However, students were of the view that they have an easy access to sophisticated scientific equipments.

Proforma 6

SURVEY OF DEPARTMENT OFFERING Ph.D. PROGRAMS

The following information is required for EACH Department in which a Ph.D. program is offered.

1	**General Information:**
1.1	Name of Department: Plant Breeding and Genetics
1.2	Name of Faculty : Faculty of Crop and Food Sciences
1.3	Date of initiation of Ph.D. program : 1999
1.4	Total number of academic journals subscribed in area relevant to Ph.D. program. Nil
1.5	Number of Computers available per Ph.D. student : 0.8
1.6	Total Internet Bandwidth available to all the students in the Department. Normal connection available in the university
2	**Faculty Resources:**
2.1	Number of faculty members holding Ph.D. degree in the department.: 9
2.2	Number of HEC approved Ph.D. Advisors in the department.: 7
3	**Research Output:**
3.1	Total number of articles published last year in International Academic Journals that are authored by faculty members and students in the department. 8
3.2	Total number of articles published last year in Asian Academic Journals that are authored by faculty members and students in the department. 10
3.3	Total number of ongoing research projects in the department funded by different organizations:3
3.4	Number of post-graduate students in the department holding scholarships/fellowships. 2
3.5	Total Research Funds available to the Department from all sources. About Rs.30,000/- (Operational Budget)
3.6	Number of active international linkages involving exchange of researchers/students/faculty etc. Nil

4	**Student Information:**
4.1	Number of Ph.D. degrees conferred to date to students from the Department during the past three academic years. 3
4.2	Number of Ph.D. students currently enrolled in the department.:8
4.3	Ratio of number of students accepted to total number of applicants for Ph.D. Program. 1:3
5	**Program Information**

5.1	Entrance requirements into Ph.D. Program (M.Sc. / M.Phil.) Indicate subjects or M.Sc. / M.Phil. :MSc(Hons.)Agri.(PBG)
5.2	Is your Ph.D. program based on research only? (No)
5.3	Maximum number of years in which a Ph.D. degree has to be completed after initial date of enrollment in Ph.D. program. 5 Years
5.4	Total number of post M.Sc. (16 year equivalent) courses required for Ph.D. : 6
5.5	Total number of M.Phil. level courses taught on average in a Term / Semester. 5
5.6	Total number of Ph.D. level courses taught on average in a Term / Semester. 2
5.7	Do your students have to take/write:
	a. Ph.D. Qualifying examination (y) Thesis defence in an open seminar
	b. Comprehensive examination (Y)
	c. Research paper in HEC approved Journal (Y)
	d. Any other examination (Y) :International GRE Type Test
5.8	Total number of International examiners to which the Ph.D. dissertation is sent. Two
5.9	How is the selection of an examiner from technologically advanced countries carried out? Selection is based on strict criteria from technologically advanced countries and their names are approved by Departmental Board of Studies.
5.10	Is there a minimum residency requirement (on campus) for award of Ph.D. degree? Three years
6	**Additional Information**
6.1	Any other information that you would like to provide.

Summary

The Department of Plant Breeding and Genetics is actively engaged in problem oriented research activities aimed at overall crop improvement. Consistent efforts have been made to improve the course content according to the standards set by HEC Curriculum Committee. The performance of the Department and the quality of the subject material taught is widely acknowledged by the students through regular surveys. The general satisfaction level of faculty is quite high. The Department is in pursuit of academic excellence through capable faculty members which will pave the way for future success.

The students have been provided with all basic facilities to plan and execute their research activities. The courses have been made keeping in mind the latest research developments in this very important field of applied science. These courses include, Genetic Engineering and Biotechnology, Advanced Genetics, Advanced Methods in Plant Breeding which have the concept building knowledge related to these fields. The courses are regularly modified and updated as per Guidelines of HEC Curriculum Committee recommendations.

A perusal of Proforma 1 and Proforma 10 filled by the Post Graduate students revealed that most of the students found the course content, general information, lecture delivery procedures, assessment methods satisfactory and strongly agreed with the general information gathered from these courses. It has been highlighted in the surveys of graduating students and alumni that although the department has developed very well equipped laboratories, but due to insufficient funding and procedural delays for purchase of chemicals adversely affects the research activities. Therefore, there should be revolving fund available to cater the needs of research students.

Proforma 9

Faculty Resume

Name	Dr M. Kausar Nawaz Shah
Personal	Professor, Plant Breeding and Genetics Department PMAS Arid Agriculture University Rawalpindi Email: drgshabbir@uar.edu.pk
Experience	Working as Professor
Honor and Awards	
Memberships	Pakistan Botanical Society
Graduate Students Postdocs Undergraduate Students	Supervised Five M.Sc.(Hons)Agri. PBG students and Committee member to many Supervisory Committees
Service Activity	Teaching and Research
Brief Statement of Research Interest	Breeding and genetics of drought tolerance in field crops
Publications	1) Rehman R., M. Arshad, M. A. Khan, A.S. Mohmand, G. Shabbir and M. K. N. Shah. 2012. Using multivariate analysis for selecting desirable hybrids In sunflower (Helianthus annuusL.). Pakistan Journal of Botany, 44(5): 1715-1720. 2) Rabbani G., A. Mahmood, G. Shabbir, K .N. Shah and N. U. Din. 2011. Gene action in some yield attributes of bread wheat under two water regimes. Pakistan Journal of Botany, 43(2): 1141-1156. 3) Hussnain S.Z., M. I. Haque, S. M. Mughal, K. N. Shah, A. Irfan, S. Afghan, A. Shahazad, A. Batool, P. Khanum, K. Hussain, K. Nawaz, M. N. Hassan and F. Y. Hafeez. 2011. Isolation and biochemical characterizations of the bacteria (Acidovorax avenae subsp. avenae) associated with red stripe disease of sugarcane. Afr. J. Biotech. 10(37): 7191-7197. 4) Shabbir G., M. Aftab, A. Mahmood, K. N. Shah and N. M. Cheema. 2011. Chakwal sarson: A new high yielding rapeseed variety. Pakistan J. Agric. Res. 24 (1-4): 14-18. 5) Ikramullah, I. H. Khalil, M. Noor and M. K. N. Shah. 2011. Heterotic effects for yield and protein content In white quality protein maize. Sarhad j. Agric. 27 (3):403-409. 6) Ali, B., M. S. Iqbal, M. K. N. Shah, G. Shabbir and N. M. Cheema.2011. Genetic analysis for various traits in Gossypium hirsutum L. Pakistan J. Agric. Res. 24 (1-4):8-13.
Research Grants and contracts	HEC Funded project

Other Research or Creative Accomplishments	• Developed three cotton varieties • Developed a sorghum variety ***"Chakwal Sorghum"***
Selected Professional Presentation	-

Proforma 9

Faculty Resume

Name	Dr. Zahid Akram
Personal	Associate Professor, Department of Plant Breeding and Genetics, PMAS, Arid Agriculture University Murree Road, Rawalpindi Telephone No.: 0307-5292949 E. Mail Address: zahid.akram@uaar.edu.pk
Experience	Date Title Institution 14-12-2010 Associate Professor PMAS-AAUR 02-12-2002 Assistant Professor PMAS-AAUR 01-04-1998 Lecturer PMAS-AAUR 08-09-1993 Assistant Research Officer Agriculture Research Wing Punjab
Honor and Awards	Merit Scholarship holder throughout academic career
Membership	Member of Pakistan Botanical Society
Graduate Students Postdocs Undergraduate Students Honour Students	Eleven Masters level student have graduated under my supervision. Currently seven M.Sc (Hons) students and three Ph.D scholars are working under my supervision.
Service Activity	Teaching and Research
Brief Statement of Research Interest	Breeding wheat for yield and quality traits using conventional and marker assisted selection .
Publications	1. **Akram, Z.**, S.U.Ajmal, K.S.Khan, R.Qureshi and M.Zubair.2011. Combining ability estimates of some yield and quality related traits in spring wheat (*Triticum aestivum* L.).Pak.J.Bot., 43(1):221-231. **(IF-0.905).** 2. Shabbir,G., N.H.Ahmed, **Z.Akram** and M.I.Tabassum.2011. Genetic behavior and analysis of some yield traits in wheat (*Triticum aestivum* L.) genotypes. J.Agri.Res.,49(1):1-9. 3. Nazir,F., M.U.Hassan, **Z.Akram**, M.M.Javed, S.Ali, G.M.Ali and Y.Zafar.2011.Invitro regeneration of

	Pakistani Peanut (*Arachis hypogea* L.) varieties using de-embryonated coteledonary explants.Afr.J.Biotech.,10(43):8599-8604. **(IF-0.565).** 4. Khalid, R., K. S. Khan, **Z. Akram**, R. Qureshi and M. Gulfraz. 2011. Relationship of plant available sulphur with soil characteristics, rainfall and yield levels of oilseed crops in pothwar Pakistan. Pak.J.Bot., 43(6): 2929-2935. **(IF-0.905).** 5. **Akram, Z**., M. M. Khan, G. Shabbir and F. Nasir. 2011. Assessment of genetic variability in different sorghum genotypes for drought tolerance based on their RAPD analysis. J.Agric.Res., 49(4): 455-463. 6. Anwar, Z., M.Gulfraz, M.J.Asad, M.Imran, **Z.Akram**, S.Mehmood, A.Rehman, P.Anwar and A.Sadiq. 2012. Bioethanol productions from rice polish by optimization of dilute acid pretreatment and enzymatic hydrolysis. Afr.J.Biotech., 11(4): 992-998. **(IF-0.565).** 7. Tariq, A. S., **Z. Akram**, G. Shabbir, M. Gulfraz, K. S. Khan, M. S. Iqbal and T. Mahmood. 2012. Character association and inheritance studies of different sorghum genotypes for fodder yield and quality under irrigated and rainfed conditions of Punjab,Pakistan. Afr.J.Biotech., 11(38):9189-9195. **(IF-0.565).** 8. Shafi,A., G.Shabbir, **Z.Akram**, T.Mahmood, A.Bakhsh and I.R.Noorka.2012. Stability analysis of yield and yield components in chickpea genotypes across three rainfed conditions of Pakistan. Pak.J.Bot.,44(5):1705-1709. **(IF-0.905).** 9. Amber,P., A.Akram, R.U.Qureshi and **Z. Akram**. 2012. HPLC analysis for secondary metabolites detection in *Sclerotium rolfsii* isolated from chickpea. Pak.J.Bot., 44 (SI1):417-422. **(IF-0.905).** 10. Baig,M.M.Q., I.A..Hafiz, N.A.Abbasi, M.Yaseen, **Z.Akram** and D.J.Donnelly. 2012. Reduced-stature Rosa species through in vitro mutagenesis. Can.J.Pl.Sci.92(6):1049-1055. **(IF-0.613)**. 11. Shabbir,G., T.Kiran, **Z.Akram**, M.I.Tabassum and K.N.Shah. 2012. Genetics of some biometric traits in

	bread wheat (*Triticum aestivum* L).J.A.R.50(4): 457-468. 12. Rasheed, A.,T.Safdar, A. G.Kazi, T. Mahmood, **Z.Akram**, and A. Mujeeb-Kazi. 2012. Characterization of HMW-GS and evaluation of their diversity in morphologically elite synthetic hexaploid wheats. Breed Sci., 62(4): 365–370. **(IF-1.248).**
Research Grants and contracts	Completed a research project funded by university on "estimation of genetic divergence for drought tolerance in some sorghum genotypes as revealed by RAPD analysis" worth Rs.92,700/=.
Other Research or Creative Accomplishments	-------
Selected Professional Presentation	-------

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Faculty Resume

Name	Dr Ghulam Shabbir
Personal	Assistant Professor, Plant Breeding and Genetics Department PMAS Arid Agriculture University Rawalpindi Email: drgshabbir@uar.edu.pk
Experience	Working as Assistant Professor since 05-05-2007 to date Worked as Assistant Research Officer from 29-05-1991 to 05-04-2007 at Barani Agricultural Research Institute Chakwal
Honor and Awards	1. *Bronze Medal* in B.Sc. (Hons) Agriculture. 2. *Quaid-e-Azam Scholarship* for Ph D 3. *Overseas Research Students Award*
Memberships	Pakistan Botanical Society
Graduate Students Postdocs Undergraduate Students	Supervised Eleven M.Sc.(Hons)Agri. PBG students and Committee member to many Supervisory Committees Years — Degree — Name 2009 — M.Sc.(Hons) — Naeem Murtza 2009 — M.Sc.(Hons) — Tanvir Naqvi 2009 — M.Sc.(Hons) — Nadia Hussain Ahmad 2009 — M.Sc.(Hons) — Adeel Shafi 2010 — M.Sc.(Hons) — Aisha Arshad 2010 — M.Sc.(Hons) — Tayyaba Kiran 2010 — M.Sc.(Hons) — Misbah Sehar 2010 — M.Sc.(Hons) — Mushtaq Ahmad 2011 — M.Sc.(Hons) — Bushra Moin 2011 — M.Sc.(Hons) — M. Imran Khan 2011 — M.Sc.(Hons) — Shagufta Nasim
Service Activity	Teaching and Research
Brief Statement of Research Interest	Breeding and genetics of drought tolerance in wheat
Publications	1) Rabbani, G., A. Mahmood, **G. Shabbir,** M.K.N. Shah and N. U. Din. 2011. Gene action in some yield attributes of bread wheat under two water regimes. *Pak. J. Bot.*, 43(2): 1141-1156. 2) **Shabbir, G.,** N.H. Ahmad, Z. Akram and M.I. Tabassum. 2011. Genetic behaviour and analysis of some yield traits in wheat (*Triticum aestivum* L.) genotypes. *J. Agric. Res.*, 49(1): (1-9). 3) **Shabbir, G.,** M. Aftab, A. Mahmood, M.K.N. Shah and N.M. Cheema. 2011. Chakwal Sarson - A new high yielding rapeseed (*Brassica napus*) variety. *Pak. J. Agric. Res.*, 24(1-4):(Accepted).

	4) Khan, M., Z. Akram and **G. Shabbir**. 2011. Assessment of genetic variability in different sorghum genotypes for drought tolerance based on their rapid analysis. *J. Agric. Res.*, 49(4): (Accepted). 5) Qureshi. R., G.R. Bhatti and **G. Shabbir**. 2011. Floristic Inventory of Pir Mehr Ali Shah Arid Agriculture University Research Farm at Koont and its Surrounding Areas. *Pak. J. Bot*., 43(3): 1679-1684. 6) Abbas, G., K. Farooq, I.A. Hafiz, A. Hussain, N. A. Abbasi, and **G. Shabbir**. 2011. Assessment of processing and nutritional quality of potato genotypes in Pakistan. *Pak. J. Agri. Sci.,* 48(3): 169-175.
Research Grants and contracts	Profiling wheat germplasm for drought tolerance based on physio-morphic markers submitted to PMAS-AAUR
Other Research or Creative Accomplishments	• Developd a rapeseed variety "***Chakwal Sarson***"and contributed to the development of a mustard variety *"**Chakwal Raya**"* • Contributed to the development of sorghum variety ***"Chakwal Sorghum"***
Selected Professional Presentation	-

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Faculty Resume

Name	Mr.Nasir Minhas
Personal	Assistant Professor, Department of Plant Breeding and Genetics, PMAS, Arid Agriculture University Murree Road, Rawalpindi
Experience	Date Title Institution 06-01-98 Assistant Professor PMAS-AAUR 02-04-87 Lecturer Barani College/Arid University
Honor and Awards	Nil
Membership	Member of Pakistan Botanical Society
Graduate Students Postdocs Undergraduate Students Honour Students	2010-11 Degree 6 M.Sc(Hons)
Service Activity	Nil
Brief Statement of Research Interest	Interested in the genetic improvement of crops so that the less privileged people could also be fed
Publications	Nil
Research Grants and contracts	Nil
Other Research or Creative Accomplishments	Nil
Selected Professional Presentation	Nil

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Faculty Resume

<table>
<tr><td>Name</td><td>Dr Talat Mahmood</td></tr>
<tr><td>Personal</td><td>03338367573</td></tr>
<tr><td>Experience</td><td>
<table>
<tr><th>Date</th><th>Title</th><th>Institutation</th></tr>
<tr><td>01.04.2011 to todate</td><td>Assistant Professor</td><td>PMAS-Arid Agri. Univ. Rawalpindi</td></tr>
<tr><td>16.05.2007 to 31.03.2010</td><td>Lecturer</td><td>Do</td></tr>
<tr><td>26.01.1991 to 15.05.2007</td><td>Agricultural Officer</td><td>Govt. of Punjab, Agri. Ext. Deptt.</td></tr>
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</td></tr>
<tr><td>Honor and Award</td><td>No</td></tr>
<tr><td>Memberships</td><td>No</td></tr>
<tr><td>Graduate students Postdocs undergraduate students, Honour Students</td><td>
<table>
<tr><td>Years</td><td>Degree</td><td>Name</td></tr>
<tr><td>2009</td><td>M.Sc.Hons.Agri. PBG</td><td>Muhammad Faheem</td></tr>
<tr><td>2009</td><td>M.Sc.Hons.Agri. PBG</td><td>Muhammad Bilal</td></tr>
<tr><td>2010</td><td>M.Sc.Hons.Agri. PBG</td><td>Saadia</td></tr>
<tr><td>2010</td><td>M.Sc.Hons.Agri. PBG</td><td>Tahira Bibi</td></tr>
<tr><td>2011</td><td>M.Sc.Hons.Agri. PBG</td><td>Muhammad Sohail Akbar</td></tr>
<tr><td>2011</td><td>M.Sc.Hons.Agri. PBG</td><td>Waqas sadiq</td></tr>
</table>
</td></tr>
<tr><td>Service Activity</td><td>Teaching, research and technology transfer</td></tr>
<tr><td>Brief statement of research interest</td><td>Improvement in wheat for yield and environmental stresses</td></tr>
<tr><td>Publications</td><td>1. Naeem, A., T. Mahmood, M. Ahsan, A. Aziz, M. Ashraf, S. ahmad, M. Asif and E. Safdar. 2011. Estimation of correlation coefficients among seed yield and some quantitative traits in wheat (Triticum aestivum L.). African J. Agri. Research 6(1): 152-157.</td></tr>
<tr><td>Research grants and contracts</td><td>No</td></tr>
<tr><td>Other research or creative accomplishments</td><td>No</td></tr>
<tr><td>Selected professional presentations</td><td>No</td></tr>
</table>

Mahmood-ul-Hassan

Lecturer

Plant Breeding & Genetics

M.Sc. (Hons) Agri.

Phone	+92-051-9290151-52
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Fax No	+92-051-9290160
Email	hmhassanq@hotmail.com
Postal Address	Department of Plant Breeding and Genetics, University of Arid Agriculture, Rawalpindi, Pakistan.
Work Experience	2 year(s)
Areas of Research Interests	i. Cereals, pulses and vegetable breeding, genetics and biotechnology ii. Haploid culture
Publications	**Total:** 2