AIC Report

Prof. Dr. Zahid Akram

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Department of Plant Breeding and Genetics
University of Haripur
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Executive Summary

- Department History and Main Features

The Department of agricultural sciences was established in April, 2008 under the umbrella of Faculty of Sciences at Haripur Campus of Hazara University and classes of B.Sc (Hons) Plant Breeding and Genetics major were started in 2010. University act of University of Haripur was approved in July, 2012.

Presently the chairman and other related staff of the department are housed in the newly constructed building along with other departments. The department is engaged in genetic improvement of crops under irrigated and rainfed conditions of the Province. The existing infrastructure of the Department of PBG however needs further improvement and up gradation to cope with the needs of well trained highly qualified faculty members to carry out quality teaching and research.

Degree programs offered

- B.Sc (Hons) Agriculture with major Plant Breeding and Genetics
- M.Sc (Hons)
- Ph.D

CRITERION ANALYSIS

Criteria I: Strength and Quality of Faculty

The Faculty members of the Department of Plant Breeding and Genetics, University of Haripur are capable of teaching and conducting research of good quality. Most of the teachers are young and highly qualified. They are able to teach and train the students to face challenges. Presently, there are three Assistant Professors (including one IPFP) and one lecturer. Two of them are Ph.D while remaining two are M.Sc (Hons). Range of experience of faculty members; vary from 2-7 years. Department is running graduate and post graduate programs. Faculty members of the department are also rendering their services to the farming community. As there are only Assistant Professors and Lecturer working in the department, therefore there is a dire need of permanent/regular appointment of Assistant Professors, Associate Professors and Professor to justify the work load and to fulfill the HEC criteria. At present Assistant Professor is being given 12 credit hours and Lecturer 15 credit hours to teach different courses. The Faculty is using multimedia for teaching and evaluations techniques such as quizzes, assignments, projects, seminars plus presentations. PBG faculty has two offices with full internet and digital library access. Evaluations for sessional, mid and final examinations are in operation. Dean and Principal are there for monitoring the existing system in
addition to the chairperson. Participations of students in seminars and conferences are limited. Two faculty members have submitted research projects to HEC and PSF for funding and at present there is only one ongoing project running in the department worth 0.5 million. Funds and facilities are not available for participation of students in seminars/conferences.

Faculty research publications in national and international journals are not adequate in number. Contribution toward publication of books, chapters and proceedings is also not encouraging and need further improvement. One Rapeseed variety has been developed and approved by the faculty member of the department. Faculty perception about degree program is clear. Annual calendar for academic activities is maintained. The student teacher ratio is not good; however, teacher can focus the students in a better way due to low strength of students and giving more session to question answer and presentations etc.

Criteria II: Curriculum Design and Development

The Department of Plant Breeding and Genetics, at University of Haripur, is focusing on improvement of curricula and contributing more to the teaching of 4 years B.Sc (Hons) degree program. The curriculum has been revised frequently by the Department/Faculty as well as HEC. Curriculum is well defined with clear objectives. Still, there is continuous revision of the curricula for B.Sc (Hons) text books and reference books are available. However, there is no book bank of the Department and available one is for the whole university. The budget for books is available for main library of the Faculty and not for the department. The library has sufficient space both for faculty and students. The library is also connected with HEC digital library service and equipped with a number of desktop computers for student’s facilitation. There is urgent need for separate departmental budget for books plus research journals. Budget given for the research and other purposes is available from a project and need availability in a permanent and continuous manner. A separate budget for books and journals can provide better learning opportunities. Credit hours and contact hours are justified for existing staff. Course completion is a regular and encouraging process of the department.

There is a fully equipped seminar room and committee room in the university. All students of this department are well informed and fully aware about course program, admission policy, enrolment, withdrawal and course break up. Course files verified by the AIC are maintained but need some improvement that has been pointed out by the committee. QEC of the university is existing and has evaluated teachers, course satisfaction, and teacher evaluation by the student.
Criteria III: Infrastructure and Learning Resources

There was no lab facility of the department, only one central lab is existed. There are eight class rooms equipped with multimedia in the university out of which two are allocated for PBG classes. Class rooms are not enough for the working of students. There is one central lab which contains basic equipments. The laboratory is run by qualified and experienced staff. The Incharge of the lab has M.Sc in Lab Technology while Lab Attendant has B.Sc (Hons)Agri. There is need of fully equipped more departmental labs and class rooms. Equipment available is insufficient and need more budget for research. Supporting staff is insufficient and not fully trained. Provision of better equipment and trained supporting staff is urgent need of this department. The share of the department, in annual budget of the Faculty for books, chemicals and glassware is insufficient. Practical work and write up of practical note books is good.

Criteria IV: Students Support and Progression:

Departmental admission to B.Sc. (Hons) is not desirable. There were only forty four students in the B.Sc (Hons) per year. Availability of academics guidance/counseling to students is insufficient.

Scholarship to the students are available on merit and need basis however, these are insufficient. Students are getting scholarships from different sources or donor agencies. Beneficiaries of merit scholarships out of 102 students are 8 in number similarly beneficiaries of need-based scholarships out of 102 students are still in process. Hostel accommodation for boys is not available. Transport facility is adequate with 2 coasters (32 seats) and 4 buses (55 seats) but limited sports facilities are available. Field visits and study tours are regularly arranged for the students. There is a good atmosphere for co-curricular activities. Student attendance is being taken regularly and there is restriction for presence of 75 %. Record of attendance has been verified by the AIC as course files. Medical and transport facilities are adequate. However, there is need in improvement of computing facilities, research funds, and internship allowances.
2. **SWOT ANALYSIS OF THE DEPT DEGREE PROGRAMS**

(A brief SWOT of the Deptt. of Plant Breeding and Genetics, University of Haripur, Hazara, is presented herewith)

**STRENGTHS**

- Qualified faculty with Ph.D in different areas of Plant Breeding
- Students trend towards Agriculture is very promising especially to the field of Plant Breeding and Genetics.

**WEAKNESS**

- Shortage of permanent and senior/experienced Faculty members as Professor and Associate Professors
- Separate Laboratory and research area is not available.
- Access to the international Journal is needed.
- Relevant course books are short.
- Department has not sufficient PhD faculty.
- Limited and unskilled supporting staff of the laboratories
- Limited infra structure as teaching facilities, Teacher offices, seminar room, staff rooms.
- Lack of periodicals and journals for faculty and students
- Lack of departmental library and internet facilities
- Budget constraints

**ACTIONABLE RECOMMENDATIONS**

- Some of the immediate actionable points emerged from the discussion are as under:
- The department is newly established and need financial grants for strengthening.
- Limited research facilities especially scientific equipments, instruments and chemical. Therefore, special funds may be arranged to strengthen the facilities.
- Teaching staff is not enough and experienced. There is need to provide two Associate Professors and one Professor.
- There is shortage of experienced supporting staff, especially laboratory staff (Lab Assistant and Lab Attendant). The department may be provided with enough trained laboratory staff.
- There is need of establishment of seminar room, staff rooms and Dept library with computer/internet facilities
- Provision of more space (separate or shared office) for all teachers, labs and classrooms
- Need of budget for chemicals, glassware, books and other facilities.
- There is need for installation of Green Houses.
- Library facilities may also be strengthened for purchase of books and Journals.
- Need of more opportunities, scholarships and financial aids
- Regular revision of Post Graduate Curricula
- Provision of research grant on the basis of postgraduate students.
Annexure I.  NAEAC Inspection Committee

The approved committee of NAEAC which visited Department of Plant Breeding and Genetics of University of Haripur comprised of:

1. Dr Naseer Alam  Secretary NAEAC
2. Dr.Zahid Akram  Associate Professor Dept. Plant Breeding and Genetics, PMAS-Arid Agriculture University Rawalpindi

Annexure II.  List of Books and Lab Equipments


41. Plant Genetics (Ind/Ed)

42. Plant Physiology: Fundamentals And Applications 2nd/Ed (Ind/Ed)

43. Bioinformatics

44. Principles Of Crop Production: Theory, Techniques And Technology 2nd/Ed

45. Botany: An Introduction To Plant Biology 5th/Ed (Includes Online Access)

46. Sustainable Crop Production Under Stress Environments

47. Handbook Of Agricultural Science (Ind/Ed)

48. Fertilizers And Crop Production (Ind/Ed)
49. Agronomy At A Glance (Ind/Ed)

50. Plant Physiology: With Reference To The Green Plant 2nd/Ed (3 Vols Set)

51. Basic Concepts Of Fruit Science 2nd/Ed (Ind/Ed)

52. Experimental Designs 2nd/Ed (Ind/Ed)

53. Plant Breeding: Molecular And New Approaches (Ind/Ed)

54. Principles Of Plant Genetics And Breeding 2nd/Ed

55. Crop Diseases (Ind/Ed)

56. Genetics Engineering And Its Applications 2nd/Ed (Ind/Ed)

57. Seed Science And Technology (Ind/Ed)

58. Crop Breeding And Biotechnology (Ind/Ed)

59. Breeding Of Pulse Crops (Ind/Ed)

60. Essentials Of Plant Breeding (Ind/Ed)

61. Text Book Of Plant Breeding (Ind/Ed)

62. Principles Of Crop Production 4th/Ed (Ind/Ed)

63. Plant Breeding: Principles And Methods 2nd/Ed (Ind/Ed)

64. Seed Production Of Agricultural Crops (Ind/Ed)

65. Principles Of Seed Technology (Ind/Ed)


71. Ed., Iowa State University Press, Ames, USA


75. Arya, P.S. 2003. Vegetable Breeding, Production and Seed Production. Kalyani Publisher, New Delhi, India.


## List of Laboratory Equipments /Machinery Available in the Department of Agriculture (PBG)

<table>
<thead>
<tr>
<th>Equipment/Machinery</th>
<th>Justification / Uses in Experiments</th>
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<tbody>
<tr>
<td>Titration flask</td>
<td>To be used for chemical analysis</td>
</tr>
<tr>
<td>Hot air oven</td>
<td>For drying different soil and plant samples</td>
</tr>
<tr>
<td>Centrifuge Machine</td>
<td>To homogenize sample of experimental materials</td>
</tr>
<tr>
<td>Stirrers</td>
<td>To mix up sample of experimental materials</td>
</tr>
<tr>
<td>Hygrometer</td>
<td>For recording humidity</td>
</tr>
<tr>
<td>Compound Microscope.</td>
<td>For study of micro organism &amp; micro structure.</td>
</tr>
<tr>
<td>Pipettes</td>
<td>To be used for chemical analysis</td>
</tr>
<tr>
<td>Aspirators</td>
<td>For special insects picking</td>
</tr>
<tr>
<td>Deep Freezer</td>
<td>To preserve inoculums and other plant live materials for long time</td>
</tr>
<tr>
<td>Needles</td>
<td>Needed for different experiments</td>
</tr>
<tr>
<td>Test tubes (10 ml; 20 ml)</td>
<td>To be used for chemical analysis</td>
</tr>
<tr>
<td>Scissors</td>
<td>For training &amp; pruning of horticultural plants</td>
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<tr>
<td>PH/EC Meter</td>
<td>For determining acidity and alkalinity</td>
</tr>
<tr>
<td>Thermometer</td>
<td>For recording temperature</td>
</tr>
<tr>
<td>Water Bath 4 whole digital</td>
<td>For heating of experimental samples for chemical analysis</td>
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<tr>
<td>Digital balance</td>
<td>For accurate weighing of experimental materials.</td>
</tr>
<tr>
<td>Shaker</td>
<td>For shaking of experimental sample</td>
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<tr>
<td>Measuring rod</td>
<td>For measuring plant height in standing crops</td>
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<tr>
<td>Hand Hoe</td>
<td>For weeding in newly germinated field crops</td>
</tr>
<tr>
<td>Sickles</td>
<td>For cutting &amp; harvesting of field crops</td>
</tr>
<tr>
<td>Spade</td>
<td>For irrigation &amp; cleaning of irrigation channels</td>
</tr>
<tr>
<td>Kudhal</td>
<td>For weeding, hoeing of field crops</td>
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</tbody>
</table>
Kurpa

For weeding, hoeing of field crops

Soil sampling equipments

For soil sampling

Kjeldhal apparatus

For Nitrogen analysis

Burner

For heating

Burettes (25, 50 ml)

For chemical analysis

Triple beam stand

For chemical analysis

Conical flasks (50, 250, 500 ml)

For chemical analysis

Measuring graduated cylinder (100, 250, 500 ml)

For chemical analysis

Tripod stand

To support the burner

Volumetric flasks (250, 500, 1L)

For chemical analysis

Controlled Deep-freezer

To store the samples

Distillation apparatus

For distillation of water

Annexure III:

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<th>Name</th>
<th>Designation</th>
<th>Qualification</th>
<th>Experience</th>
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<tbody>
<tr>
<td>1. Dr. Sher Aslam</td>
<td>Assistant Professor</td>
<td>Ph.D</td>
<td>More than 2 years</td>
</tr>
<tr>
<td>2. Dr. Naushad Ali</td>
<td>Assistant Professor</td>
<td>Ph.D</td>
<td>More than 2 years</td>
</tr>
<tr>
<td>3. Mr. Safdar Ali</td>
<td>Assistant Professor</td>
<td>M.Sc(Hons)</td>
<td>More than 2 years</td>
</tr>
<tr>
<td>4. Mr. Izhar Hussain</td>
<td>Lecturer</td>
<td>M.Sc(Hons)</td>
<td>More than 2 years</td>
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Annexure IV: Funded Research Projects

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<tr>
<th>Number</th>
<th>Duration</th>
<th>Amount</th>
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<tr>
<td>i)</td>
<td>1</td>
<td>1 Year</td>
</tr>
<tr>
<td>ii)</td>
<td>-</td>
<td>-</td>
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Total: 0.5 million
The Secretary NAEAC, HEC, Islamabad

Subject: Comments on Draft Reports of Six Disciplines of Department of Agriculture

Please refer to your email and telephonic conversation on the subject matter, find attached comments on draft reports of our six disciplines for onward submission to the experts.

Agronomy: Cordial thanks are extended to Prof. Dr. Fayyaz- ul- Hassan for such encouraging and positive remarks about accreditation of B.Sc (Hons) Agriculture degree program at the University of Haripur.

It is requested to the subject expert of Agronomy to please revise his view on the continuation of M.Sc (Hons) Agriculture degree program in Agronomy.

Horticulture: Kindly refer to the draft AIC accreditation report, received through email. The report is highly encouraging and we may jointly struggle and ensure that the deficiencies/weaknesses pointed out by the AIC program experts are addressed and rectified accordingly to achieve the required standards. Furthermore, it is submitted that Horticulture is the strongest department in terms of students enrollment and experienced faculty and it has a great potential to flourish in future. The AIC expert in Horticulture may be requested to reconsider the final recommendation in connivance to the recommendations given by experts of other Departments like Entomology, PBG, and Agronomy etc.

Soil Science: Comments and suggestion by the HEC experts are very much encouraging and hope that section of Soil and Environmental sciences will improve in the light of recommendation made. It is mentioned in the report that currently no lab facility is available, however there is a central lab with good space to accommodate current students and has all be basic equipments to conduct routine soil tests. Therefore it is requested modify this part of the statement.

In SWOT analysis, section Threats it is mentioned that irrelevant faculty (i.e. one is Agri. Engineer & second is Water Engineer out of total four faculty members) has been hired. In fact, when the university of Haripur was a campus of Hazara University the nomenclature was as “Soil & Environmental Science and Water Management” and appointments were made on this basis. Since the inception of University of Haripur, the nomenclature was pruned to Soil and Environmental Sciences only. So it is requested to omit the statement from the report.

Kindly categorical recommend the B.Sc (Hons) and M.Sc (Hons) program for accreditation please.
**Plant Breeding Genetics:** The report of PBG is ok except the respected expert should recommend B.Sc (Hons) degree Program for accreditation please.

**Food Science:** The section of Food Science & Technology should be recommended for up gradation in to a Department of Food Science & Technology. Associate Professor/full professor should be recruited to meet minimum HEC criteria.

**Entomology:** The report of Entomology is ok and encouraging. Many thanks to subject experts

**Dr. Sami Ullah Khan**  
HoD, Agriculture
Modern agriculture and conventional breeding and the liberal use of high inputs has resulted in the loss of genetic diversity and the stagnation of yields in cereals in less favourable areas. Increasingly landraces are being replaced by more modern cultivars which are less resilient to pests, diseases and abiotic stresses and thereby losing a valuable source. Department of Plant Breeding & Genetics was established since inception of university with major thrust area to develop high yielding, disease resistant varieties of cereal, pulse, oilseed and other crops with better grain quality. Once the variety is released, its popularization and adoption among the farmers is the most important things for which the department conducts FLDs, organize Kisan Mela and our Scientists deliver lecture on their concerned crop and Subject on TV & Radio. THRUST AREAS. Development of high yielding abiotic stress tolerant rice varieties. Introgression of Sub-1