

Pir Mehr Ali Shah
Arid Agriculture University, Rawalpindi



Self-Assessment Report (2019-20)

Department of Botany

(PhD Botany)

Program Self-Assessment Team

- **Prof. Dr. Abida Akram (Coordinator)**
- **Dr. Khafsa Malik (Member)**
- **Dr. Noshin Ilyas (Member)**

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Introduction

Department of Botany, PMAS Arid Agriculture Rawalpindi, is one of the leading department regarding academic and research activities. PhD is the highest degree program which was started in year 2001. Till now, 44 PhD research scholars successfully received their degrees and 9 research scholars got enrolled in the program. Scholars are actively involved in research activities.

The Department has highly competent and qualified faculty, all of them have doctorate experience from reputable National and International Universities/Institutes. Our faculty is currently composed of 9 faculty members, all of these are PhDs and mostly faculty members are HEC approved supervisors for Indigenous PhD programs. The faculty members are specialized in various fields of Botany i.e. plant physiology, taxonomy, ecology ethonobotany, plant pathology, ecotoxicology, and environmental pollution and gene transformation. The faculty has produced many publications in national and international reputable journals.

Presently, the department is providing research facilities in all areas of medicinal plants including phytochemistry, molecular characterization of various compounds & allelopathic screening of plant extracts, phytosociology, ethnobotany, aflatoxin and their integrated management, stress physiology, gene transformation, taxonomic studies in all fields including algal and fungi. Furthermore, almost 19 PhD scholars have availed IRSIP program of HEC and visited different countries including USA and European countries. The Department is incessantly following HEC's recommendations for impost and updation of its activities. As per rule of HEC PhD scholars have to complete course work followed by synopsis defense and approval before starting research work in labs. This program has made it possible to introduce latest techniques and approaches in their research. PhDs also publish one research paper as per requirement of degree.

This PhD program aims to develop research and development activities that shall create highly qualified human resources in the field of management sciences. This increased intellectual activity will enhance the capabilities of the scholars in both the educational and industrial sectors and help the country in meeting the demands of the global knowledge-economy. The purpose of PhD degree is to encourage the students who have contributed significantly in their fields by

using the path of research. The scholars engaged in PhD program will not only work on conceptual principles but will also seek for practical solutions to address the social and economic and managerial problems currently faced by our nation. The research of the students will help the industry in improving their work, as well as help the service industry in increasing the quality of their employees.

SECTION 1

Components of Self-Assessment Process:

This Self-Assessment has been prescribed on the cradle of the eight criteria described in self-Assessment Manual. The Self-Assessment Report (SAR) contains eight sections. The first section outlines the program mission and objectives. Section 2 provides information about the curriculum development. Section 3 enlists the laboratories and other relevant information followed by student support and guidance. The last four sections provide information about student support, process control, faculty characteristics and institutional facilities and support provided by the university.

Criterion-1: Program Mission, Objectives and Outcomes

Introduction

The department of Botany is actively progressing towards wide range of careers by producing quality researchers in the form of PhDs. Various activities are in progress under plentiful research project funded by projecting donor establishments including University itself.

Standards 1-1: Documented measurable objectives

Mission of the Program:

Our mission is to acquire the PhD scholars a sound background and skills necessary for careers as university teachers and researchers.

We typically engage PhD scholars in dissertation research and seminars participation.

Objectives

1. To build up the Department on modern lines for education and research at PhD level.
2. To impart practical knowledge and scientific skills in the concerned subject by employing advanced analytical approaches.
3. To broaden the vision of students.
4. To planning for current and future researchable issues along with attachment to the latest teaching & research methods

Outcomes:

1. Integration was achieved through interviews, discussion on latest developments in the field and translation in applied research projects/thesis research.

2. PhD scholars are imparted practical knowledge using advanced analytical techniques.

3.Updating of curricula is done to achieve the objective of anticipation of new courses teaching/researchable areas.

Sr . #	Objectives	How Measured	When Measured	Improvement Identified	Improvement Made	Outcomes relation with objectiveObjectivesa			
1.	Development & Strengthening of Department	On the basis of availability of latest research facilities and practical application of new technology	continuous activity	Teaching and research methodology is needed to be improved	Teaching and research methods have been revised in order to make them more attractive and understandable	++	++	++	++ +
2.	To impart practical / applied knowledge to the Doctorate scholars.	Through the semester, oral and Written comprehensive examinations.	During their Doctorate research and comprehensive examinations	New research facilities are needed to be included	Improvement in research	++ +	++	++ +	++
3.	Integration of related field	By examining the students in integration of the things or different aspects	During semester and comprehensive exams, and research activity	New research areas	Better research and publications	++	++ +	++ +	++ +
4.	During semester and comprehensive exams. And research activity	With the need of current advancement in the relevant area	Continuous activity	Time need based new courses research problems are needed to be included	Approval of new research areas has been accorded	++	++ +	++	++ +

+ = Moderately satisfactory, ++ = Satisfactory, +++ = Highly satisfactory

Meeting Standards 1-2: Program Outcome Measurement

A number of assessments based on the SAR questionnaires were commenced to assess the Program outcomes/ graduates of the department and teacher's evaluation. Maximum students filled the survey forms.

Program Assessment Results:

The outcomes of Program assessment by the SAR are presented in graphical method. However, the inclusive outcomes show that the students are contented with the Program and method of teaching.

Student Course Evaluation

Maximum of the students' favor almost the course contents of each course, their prospect and applications in daily life beside with the presentation by the concerned tutor. The outcomes of this survey are presented graphically, which are affixed.

Standards 1-3:

- Action taken had been submitted earlier as separate file for all previous report.
- Emphasis on student involvement in class activity/teacher interaction. More emphasis on practical.

Strength of program

Updated course, curriculum in accordance with HEC criteria overall student satisfaction.

Weakness of program

Practicals should be more emphasized.

Future development

Improvement in class, infrastructure e.g lecture halls, multimedia, chair.

Standard 1-4:

- Number of students enrolled are 30.
- Student faculty ratio 1:20.
- Average grade point as per university policy.
- Employ were 80% satisfy.
- Student evaluation was good.
- Seed certification, plant identification, soil fertility.
- All are well satisfied.

PROGRAM OUTCOMES:

Skills and capabilities Reflected In performance as Botanists:

Degree of skills and capabilities that will reflect on their performance as botanist:

- Students shall have an ability to use conventional as well as modern tools, techniques and skills necessary to conduct botanical research.

- PhD scholars will acquire conceptual and operational understanding of subject.
- It will also build confidence to communicate and shall also develop the skill of effective writing.
- Students will be able to work as professionals
- Basic skills and practical approach towards analytical techniques of the students will be improved.
- Students shall learn to develop an insight for research design.
- Students shall have an understanding of professional and ethical responsibilities of a botanist.
- Students will become proficient in skills and attitudes.
- Team work among the researchers will be ensured.

Strength of the Department

1. Different project are going on in the department which are helping in strengthening of department.
2. Faculty members are
 - have specialization in their respective fields.
 - fully qualified
 - Have good command of their subject.
3. Labs are reasonably equipped.

FALL 2020

PhD

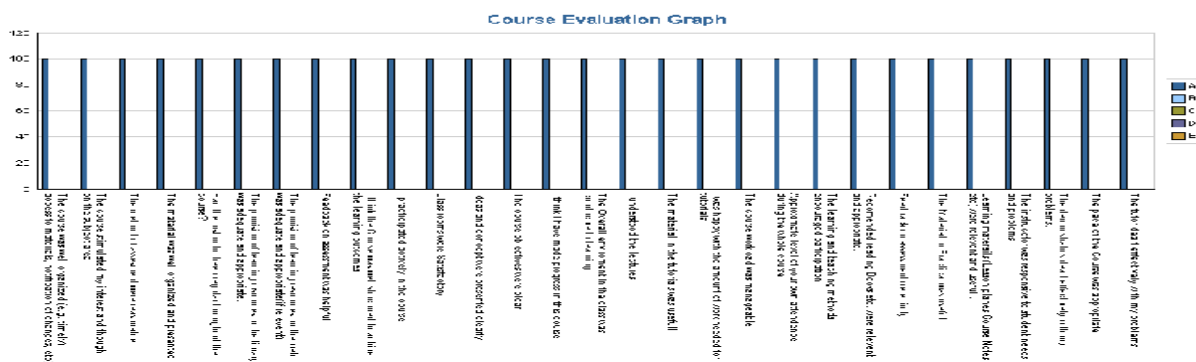
COURSE EVALUATION



**Pir Mehr Ali Shah
Arid Agriculture University
Performa 1**

Print Date: Aug. 24, 2021

Session Name: FALL-19
Teacher Name: M. Naveed Iqbal
Course Name: Integrated Biological Resource Management
Section: A **M/R:** M **Semester#** 1
Class: Ph.D (Botany)



General Comments of the Students about this Course

Weaknesses: The students showed satisfactory response

Strengths: Ideas and concepts were presented clearly. Course work and relevant material was up to date and teacher included recent materials in the course subject.

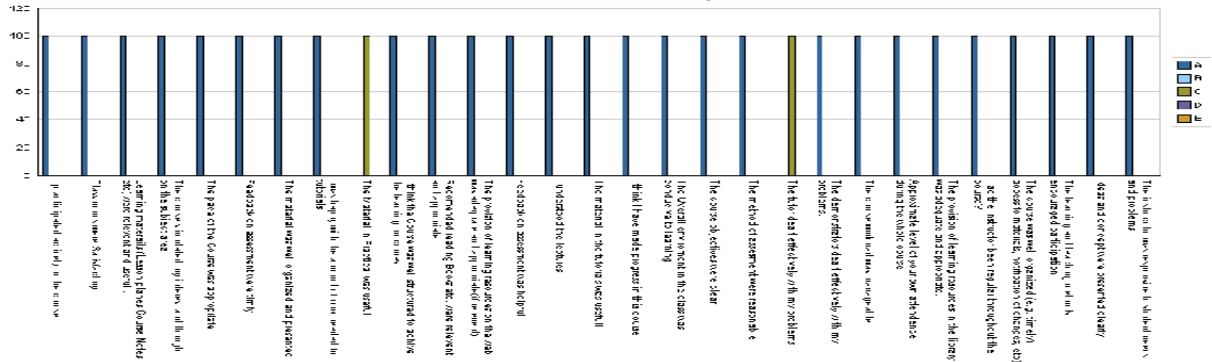


**Pir Mehr Ali Shah
Arid Agriculture University
Performa 1**

Print Date: Aug. 24, 2021

Session Name: FALL-19
Teacher Name: Abida Akram
Course Name: Seminar-I
Section: A M/R: M Semester#: 1
Class: Ph.D (Botany)

Course Evaluation Graph



General Comments of the Students about this Course

Weaknesses: No weakness recorded.

Strengths: Teacher gave well organized material and presented well. Teacher was regular. Subject objectives were clear. Course was well structured to achieve the good learning balance.

FALL 2020

PhD

TEACHER EVALUATION



**Pir Mehr Ali Shah
Arid Agriculture University
Performa 10**

Print Date: Aug. 24, 2021

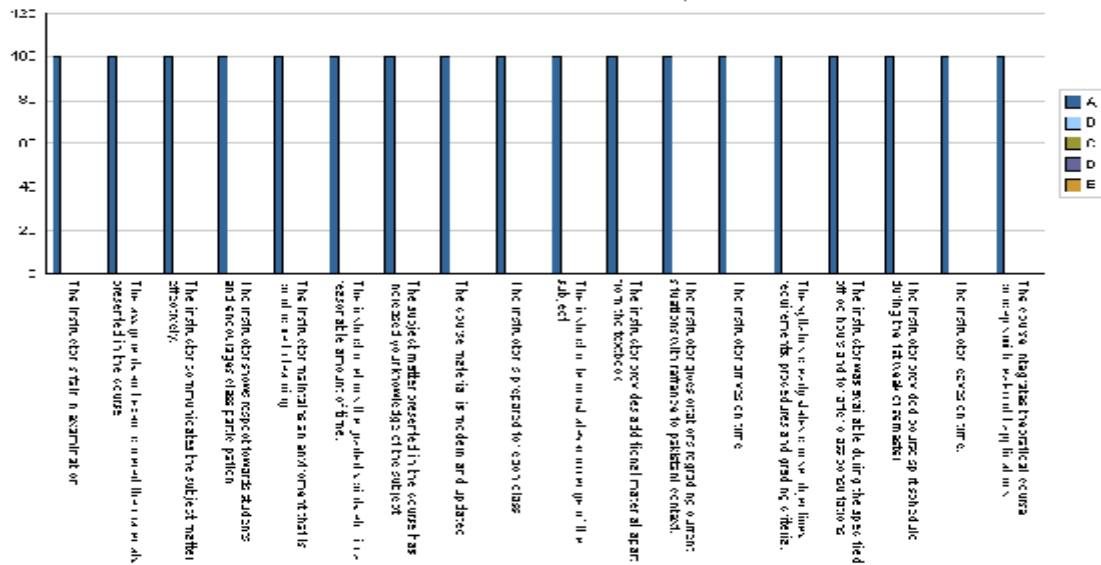
Session Name: FALL-19

Teacher Name: Abida Akram

Course Name: Seminar-I

Section: A **M/E:** M **Semester#:** 1

Teacher Evaluation Graph



.General Comments of the Students about this Teacher

Weaknesses: No greater weakness was recorded.

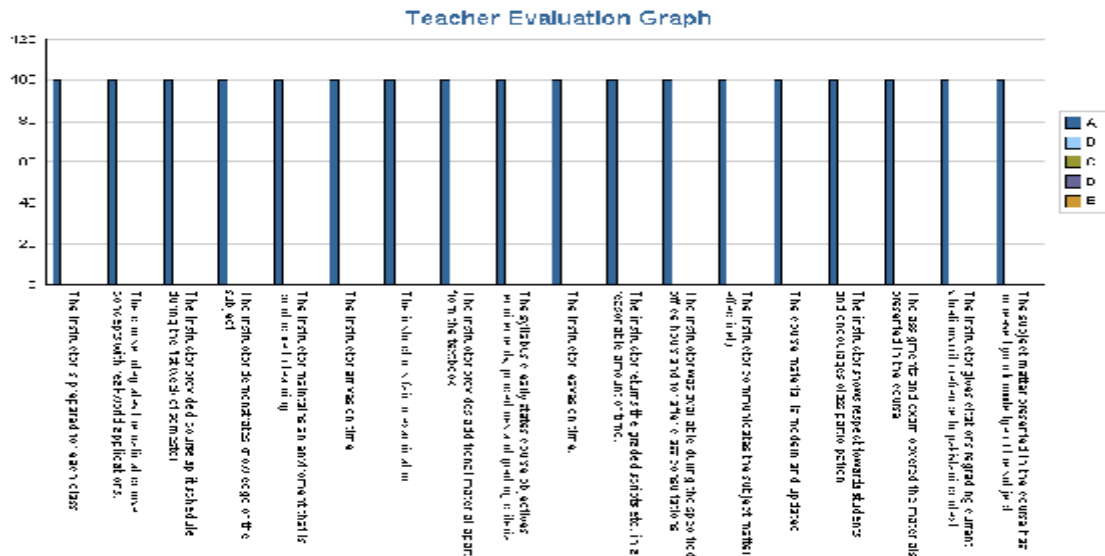
Strengths: The tutor showed the respect towards the students and encouraged the class participation. The instructor had balanced attitude and had communication skills.



**Pir Mehr Ali Shah
Arid Agriculture University
Performa 10**

Print Date: Aug. 24, 2021

Session Name: FALL-19
Teacher Name: M. Naveed Iqbal
Course Name: Integrated Biological Resource Management
Section: A **M/E:** M **Semester#:** 1



General Comments of the Students about this Teacher

Weaknesses: No weakness recorded.

Strengths: The material of the course was modern and updated. Instructor communicated this course in a respectable routine, with all characteristics of training, communication skill, contribution, including modern concepts, punctuality and behavior, etc.

SPRING 2019
PhD MORNING
COURSE EVALUATION
(No data is available)

SPRING 2019
PhD MORNING
TEACHER EVALUATION
(No data is available)

Performa 2: FACULTY COURSE REVIEW REPORT Ph.D.

Course codes	Title	Credit hours	Assesment Method/Exam	Num ber of students	Comment on curriculum	Any change in course for future	Semester	% grade					Course instructor
								A	B	C	D		
Spring-2019													
STA T-711	Advance Experimental Design with Data Processing	3(2-2)	Examination /Assignment	15	Satisfactory	Not yet	Spring-2019	13	1	1	0	0	Department of statistics
BOT -714	Molecular Plant development	3(3-0)	Examination /Assignment	15	Satisfactory	Not yet	Spring-2019	10	2	1	0	0	Dr. Saira Asif
BOT -715	Phytogeography	3(2-2)	Examination /Assignment	15	Satisfactory	Not yet	Spring-2019	9	3	1	0	0	Dr. Rahmatullah Qurshi
BOT -726	Envrimental Toxicology and Bioremediation	3(2-2)	Examination /Assignment	15	Satisfactory	Not yet	Spring-2019	8	2	2	0	0	Dr. Saira Asif
BOT -728	Principles of Genome Analysis and Genomics	3(3-0)	Examination /Assignment	15	Satisfactory	Not yet	Spring-2019	13	1	1	0	0	Dr. Naveed Iqbal
BOT -731	Conservation and Managemement of Plant Resources	3(1-4)	Examination /Assignment	15	Satisfactory	Not yet	Spring-2019	12	1	1	0	0	Dr. Yamin Bibi
BOT 720	Seminar-I	1(1-0)	Presentation and Speaking skill	15	Satisfactory	Not yet	Spring-2019	13	1	1	0	0	Dr. Yamin Bibi
BOT -720`	Seminar -II	1(1-0)	Presentation and Speaking skill	7	Satisfactory	Not yet	Spring-2019	7	0	0	0	0	Dr. Naveed Iqbal

BOT - 799`	Research Thesis	50(0-50)					Spring-2019						Respective Supervisor
Fall-2019													
BOT - 751`	Integrated Biological Resources Management	3(3-0)	Examination /Quiz	7	Satisfactory	Not yet	Fall 2019	7	0	0	0	0	Dr. Naveed Iqbal Raja
BCH -751	Advances in biotechnology	3(3-0)	Examination /Quiz	7	Satisfactory	Not yet	Fall 2019	7	0	0	0	0	Respective Department
ZOO L- 751`	Project Planning , Monitoring and Evaluation	3(3-0)	Examination /Quiz	7	Satisfactory	Not yet	Fall 2019	7	0	0	0	0	Respective Department
BOT -799	Thesis	50(0 - 100)	Examination /Quiz	7	Satisfactory	Not yet	Fall 2019	7	0	0	0	0	Respective supervisor
BOT - 720`	Seminar -II	1(1-0)	Examination /Quiz	7	Satisfactory	Not yet	Spring 2019	7	0	0	0	0	Dr. Naveed Iqbal
BOT -728	Principles of Genome Analysis and Genomics	3(3-0)	Examination /Quiz	7	Satisfactory	Not yet	Spring 2019	7	0	0	0	0	Dr. M. Naveed Iqbal
Fall-2020													
Bot - 751	Integrated Biological Resource Management	3(3-0)	Class Quiz assignment and Exam	11	Satisfactory	No	Fall-20	27.2	54.5	18.18	0	0	Dr. Naveed Iqbal
Zoo l- 751	Project Planning, Monitoring and Evaluation	3(3-0)	Presentation and Speaking skill	02	Satisfactory	No	Fall-20	50	50	0	0	0	Dr. Shamim Akhtar
BC H- 751	Advances in Biotechnology	3(3-0)	Examination /Quiz	08	Satisfactory	No	Fall-20	37.5	62.5	0	0	0	Dr. Azra Khanum
BOT 720	Seminar-I	1(1-0)	Examination /Quiz	7	Satisfactory	No	Fall-20	2	1	1	1	2	Dr. Zia ur

													Rehman Mashwani
Spring-2020													
STA T-711	Advanced Experimental Design With Data processing	3(2-2)	Examination /Quiz	1	Satisfactory	Not yet	Spring-20	1	0	0	0	0	Dr. Muhammad Hanif
BOT -733	Physiological Genetics of Plants	3(3-0)	Examination /Quiz	2	Satisfactory	Not yet	Spring-20	2	0	0	0	0	Dr. M. Naveed Iqbal Raja
BOT -732	Plant Proteonomics	3(2-2)	Examination /Quiz	1	Satisfactory	Not yet	Spring-20	1	0	0	0	0	Dr. Noshin Ilyas
BOT -731	Conservation and Management of Plant Resources	3(1-4)	Examination /Quiz	1	Satisfactory	Not yet	Spring-20	1	0	0	0	0	Dr. Yamin Bibi
BOT -716	Research Techniques and Instrumentation	3(2-2)	Examination /Quiz	1	Satisfactory	Not yet	Spring-20	1	0	0	0	0	Dr. Khafsa Malik
BOT -726	Environmental Toxicology and Bioremediation	3(2-2)	Examination /Quiz	1	Satisfactory	Not yet	Spring-20	1	0	0	0	0	Dr. Saira Asif
BOT -715	Phytogeography	3(2-2)	Examination /Quiz	1	Satisfactory	Not yet	Spring-20	1	0	0	0	0	Dr. Rahmatullah Qureshi
Bot -751	Integrated Biological Resource Management	3(3-0)	Class Quiz assignment and Exam	11	Satisfactory	No	Fall-20	27.2	54.5	18.18	0	0	Dr. Naveed Iqbal
BO T-799	Thesis Research	50(0-100)	Examination /Quiz	11	Satisfactory	No	Fall-20	27.2	54.5	18.18	0	0	Dr. Noshin Ilyas
BO T-799	Thesis Research	50(0-100)	Examination /Quiz	11	Satisfactory	No	Fall-20	27.2	54.5	18.18	0	0	Prof. Dr Abida Akram
BO T-	Thesis Research	50(0-	Examination /Quiz	11	Satisfactory	No	Fall-20	27.2	54.5	18.18	0	0	Dr. Naveed

799		100)											Iqbal
BO T- 799	Thesis Research	50(0 - 100)	Examinatio n /Quiz	1	Satisfac tory	Not yet	Spr ng- 20	1	0	0	0	0	Dr Muham mad Arshad
BO T- 799	Thesis Research	50(0 - 100)	Examinatio n /Quiz	1	Satisfac tory	Not yet	Spr ng- 20	1	0	0	0	0	Dr.Mub shra Munir
BO T- 799	Thesis Research	50(0 - 100)	Examinatio n /Quiz	1	Satisfac tory	Not yet	Spr ng- 20	1	0	0	0	0	Dr Rahmat ullah Qureshi

Proforma 3: GRADUATING STUDENTS SURVEY.

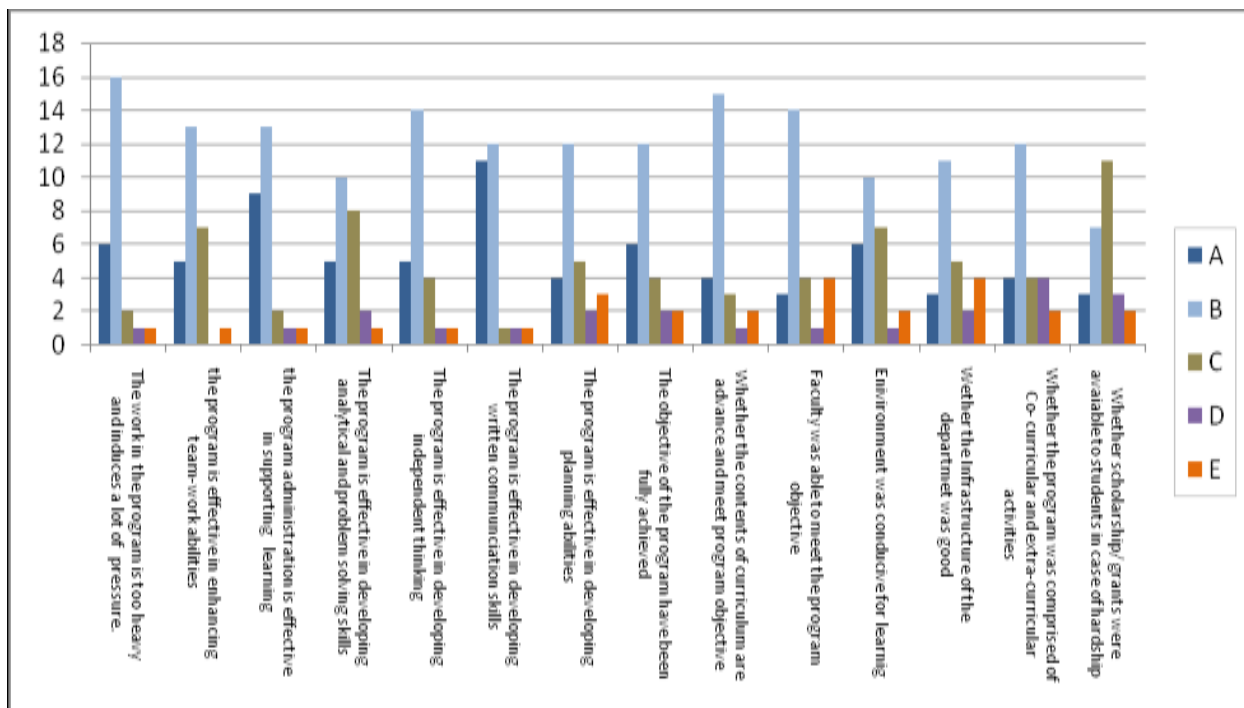
Results of survey of graduating students based on Performa 3 are represented in the given graph. The graduating students in the last semester were surveyed after thesis evaluation. Majority of students showed their satisfaction regarding all the parameters on average.

Best Aspects of the Program

- Helping attitude of the faculty for all students in research and extra-curricular activities
- Highly qualified faculty
- Research projects in collaboration

Weaknesses:

- Computational facilities need extension
- Need of more lecture halls
- Laboratory equipment needs up gradation



Proforma 4: RESEARCH STUDENTS PROGRESS REVIEW

	Question	Comments by Students
1	Please outline details of your progress in your research since your last review	Ph.D. students collaborated with foreign faculty through IRSIP program and published various research papers,
2	Do you have any comments on the level of supervision received?	Satisfied
3	What do you plan to achieve over the next six months?	Ph.Ds.have accomplished research projects for their degree.
4	Do you have any comment on generic or subject specialist training you may have received or would to like to receive internally or externally?	Ph.Ds. have planned to get by HEC-IRSIP for 06 months abroad
5	Do you have easy access to sophisticated scientific equipment's?	Yes
6	Do you have sufficient research material/commodities available?	Yes

The results of this proforma showed that most of the research students are satisfied with their research activities. All of the students had access to sophisticated instruments and have sufficient research material and commodities available. Research students have the motivation to increase their research activities by applying through HEC-IRSIP

Proforma 5: FACULTY SURVEY RESULTS

The results of personnel overview demonstrated that most of the employees were satisfied with their level of scholarly endeavors. All the employees have a good and respectable correspondence among themselves and with the students. However, a portion of the employees have reservations about the time they have for themselves and research services.

S. No.	Parameter	Dr. M Arshad	Dr. Rahmat	Dr. Abida	Dr. Noshin	Dr. Naveed	Dr. Yamin	Dr. Mubashrah	Dr Zia	Ms Saira	Dr. Khafsa Malik
1.	Your mix of research, teaching and community service	B	B	B	A	A	B	A	A	A	A
2.	The intellectual stimulation of your work	A	A	B	B	A	A	A	B	A	A
3.	Type of teaching/research you currently do.	A	A	B	A	A	A	B	B	A	A
4.	Your interaction with students	B	A	B	A	A	B	A	A	A	B
5.	Cooperation you received from colleagues	B	A	A	A	A	B	B	B	A	A
6.	The mentoring available to you	A	A	A	B	B	A	B	B	A	A
7.	Administrative support from the department	B	A	A	B	A	B	A	B	B	B
8.	Providing clarity about the faculty promotion process	A	B	B	B	B	A	B	B	B	A
9.	Your prospects for advancement and progress through ranks	B	A	A	A	B	A	A	B	B	A
10.	Salary and compensation Packages	B	B	B	B	B	C	C	B	B	A
11.	Job security and stability at the department	A	A	B	A	A	B	B	A	A	A
12.	Amount of time you have for yourself and family	C	C	C	C	B	C	B	B	C	B

13.	The overall climate at the Department	B	B	A	A	A	A	B	A	B	A
14.	Whether the department is utilizing your experience and knowledge	B	B	B	A	B	A	A	A	B	B

Proforma 06: SURVEY OF DEPARTMENT OFFERING PH.D. PROGRAMS

S.No	Requirements	Comments
1	General Information:	
1.1	Name of Dept.	Botany
1.2	Name of Faculty	Sciences
1.3	Date of initiation of Ph.D. program	2002
1.4	Total number of academic journals subscribed in area relevant to Ph.D. program.	10
1.5	Number of Computers available per Ph.D. student	01/student
1.6	Total Internet Bandwidth available to all the students in the Department.	As per university policy
2	Faculty Resources:	
2.1	Number of faculty members holding Ph.D. degree in the department.	08
2.2	Number of HEC approved Ph.D. Advisors in the department.	08
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.	250
3.2	Total number of articles published last year in Asian Academic Journals that are authored by faculty members and students in the department.	50
3.3	Total number of ongoing research projects in the department funded by different organizations	06

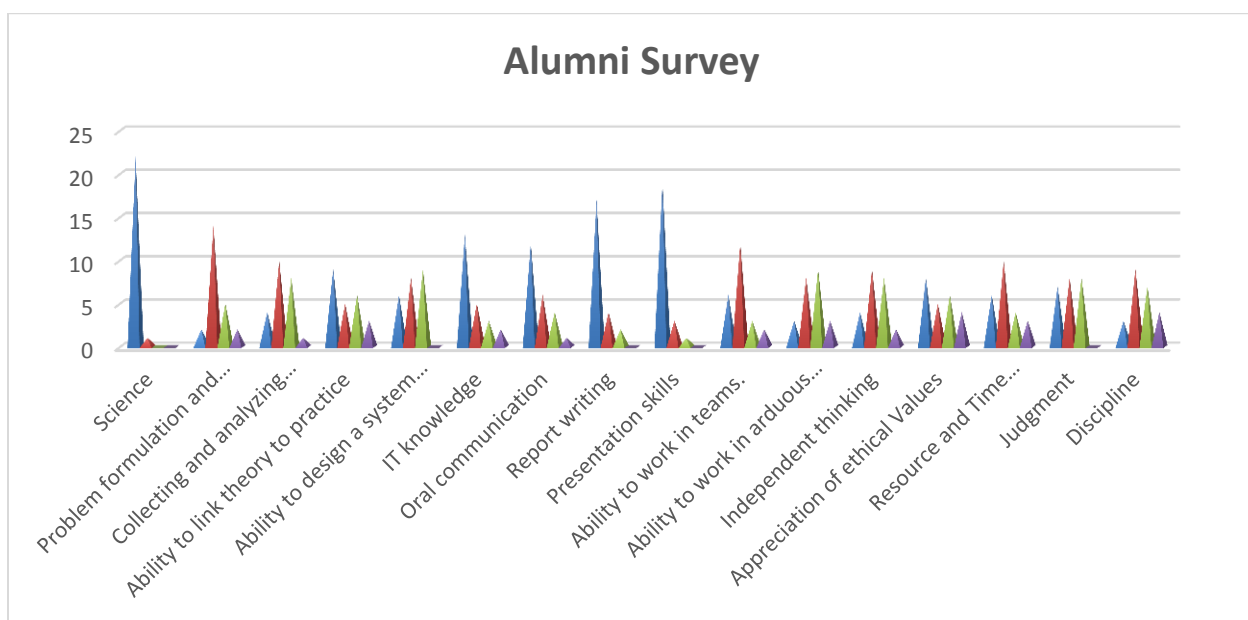
3.4	Number of post-graduate students in the department holding scholarships / fellowships.	11
3.5	Total Research Funds available to the Department from all sources.	6 million
3.6	Number of active international linkages involving exchange of researchers/students/faculty etc. (Attach Details).	Through HEC
4	Student Information:	
4.1	Number of Ph.D. degrees conferred to date to students from the Department during the past three academic years.	
4.2	Number of Ph.D. students currently enrolled in the department.	25
4.3	Ratio of number of students accepted to total number of applicants for Ph.D. Program.	1:5
5	Program Information	
5.1	Entrance requirements into Ph.D. Program	M.Phil.
5.2	Is your Ph.D. program based on research only? (Y/N)	Yes
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.	As per University Policy
5.4	Total number of post M.Sc. (16 year equivalent) courses required for Ph.D.	As per University Policy
5.6	Total number of Ph.D. level courses taught on average in a Term / Semester.	As per University Policy
5.7	Do your students have to take/write:	
	a. Ph.D. Qualifying examination (Y/N)	Yes
	b. Comprehensive examination (Y/N)	Yes
	c. Research paper in HEC approved Journal	Yes
	d. Any other examination (Y/N)	Yes (university organized test and Gat subject)
5.8	Total number of International examiners to which the Ph.D. dissertation is sent.	As per HEC policy
5.9	How is the selection of an examiner from technologically	As per University

	advanced countries carried out?	policy
5.10	Is there a minimum residency requirement (on campus) for award of Ph.D. degree?	As per university policy
6	Additional Information	
6.1	Any other information that you would like to provide.	Nil

Proforma 7:**ALUMNI SURVEY RESULTS:**

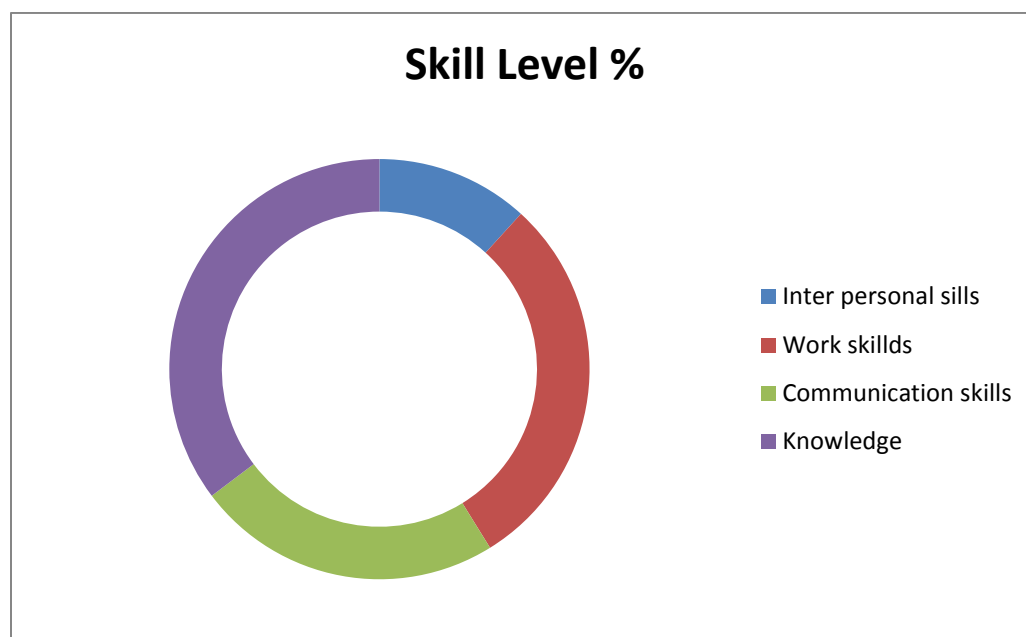
Majority of the Alumni have rated the knowledge imparted by the department, problem formulation and solving skills of the department in excellent category.

Interpersonal skills have been graded A by majority of the Alumni. Alumni was satisfied with ability to work in team, management and leadership skills, faculty and department infrastructure.



Proforma 08: EMPLOYER SURVEY

Performa 8 was sent to students working in several other organizations and their feedback was recorded. Students are working under different academic and research organizations. They are satisfied with the problem solving skills of the department. They are satisfied with all parameters regarding time management skills, ability to work in team as well as appreciation of ethical values etc. Some of the students highlighted that department should provide more research facilities.



PROGRAM OUTCOMES:

Skills and capabilities Reflected In performance as Botanists:

Degree of skills and capabilities that will reflect on their performance as botanist:

- Students shall have an ability to use conventional as well as modern tools, techniques and skills necessary to conduct botanical research.
- PhD scholars will acquire conceptual and operational understanding of subject.

- It will also build confidence to communicate and shall also develop the skill of effective writing.
- Students will be able to work as professionals
- Basic skills and practical approach towards analytical techniques of the students will be improved.
- Students shall learn to develop an insight for research design.
- Students shall have an understanding of professional and ethical responsibilities of a botanist.
- Students will become proficient in skills and attitudes.
- Team work among the researchers will be ensured.

Strength of the Department

1. Different projects are going on in the department which are helping in strengthening of department.
2. Faculty members are
 - have specialization in their respective fields.
 - fully qualified
 - Have good command of their subject.
3. Labs are reasonably equipped.

Weaknesses Identified in the Program

1. Lack of Gas supply in Laboratories
2. As an integral part of the department, it must have
 - Departmental library
 - Green house,
 - Herbarium & botanic garden
 - Computer Lab,
3. There is a lack of lectures halls.

4. There is lack of supporting staff.
5. There is a need of short foreign training to faculty members
6. Lack of essential equipment like
 - PCR equipment and ultra-centrifuge.
 - Scanning electronic microscope,
 - Homogenizer,

Major Feature of Improvement Plans

- To establish computer Lab for students
- To establish herbarium and Botanic garden in order to aid the students by physically observing plants in preserved and live state.
- To develop departmental library

Table 3: Quantitative Assessment of the Department (Year 2019-2020)

Sr. No.	Particular	No	Remarks
1	Ph.D.	40	In employment
2	Students: Faculty rates	1:20	Fulfil HEC criteria
3	Technical : No technical ratio	2: 4	Fulfil HEC criteria
4	Average grade point	?	Fulfil HEC criteria

The evaluation process indicated high efficiency of system and satisfactory impact of outcomes. Almost all the graduates and post graduates got jobs in various organizations (provincial department, universities, research organizations, banks and private firms).

Table 4: Present performance Measures for Research Activities

S. No	Faculty	Journal Publication (National & International)	Conference Publication (proceedings abstract)	Projects
1.	Dr. M. Arshad	87	Nil.	0
2.	Dr. Abida Akram	17	03	01
3.	Dr. Rahmatullah Qureshi	92	Proceeding 01	0
4.	Dr. Noshin Ilyas	24	4	0
5.	Dr. Naveed Iqbal Raja	19	0	02
6.	Dr. Yamin Bibi	28	05	0

S. No	Faculty	Journal Publication (National & International)	Conference Publication (proceedings abstract)	Projects
7.	Dr. Zia Ur Rehman Mashwani	36	2	0
8.	Dr. Saira Asif	7	0	0
9.	Dr.Khafsa Malik	16	2	0

The department is well staffed; distinguishing feature is the availability of all expertise (Genomics, Ecology, Taxonomy, Physiology, and Mycology).

Faculty Satisfaction Regarding the Administrative Services

- There are some reservations of faculty about some administrative offices of the university about disposal of documents which usually delayed.

Table 5: Degree requirements

Degree	Pre-requisites
Ph. D.	M.Sc. (Hons)/MS/M. Phil. Examination in first division or with aggregate CGPA of not less than 3.00 out of 4.00 from a recognized institution, entry test and interview. Application of the candidate must be accompanied with comprehensive research proposal to be undertaken by the candidate. The candidate must have to clear international GRE test before submission of thesis.

Curriculum Design and Organization

A. Title of Degree Program: PhD in Botany

Intent: All the courses for degree program were developed by board of studies, faculty and then academic council. Guidelines given by HEC curriculum committee are also considered.

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 work/weeks). One credit hour carries 20 marks.

C. Degree Plan

Presently three degree programs including PhD are organized by the department.

- **Ph. D.**

The program contents meet the program objectives as highlighted and provide by the Higher Education Commission, Government of Pakistan.

Table 6: Core Courses

S. No.	Course	Title	Credit
1	BOT-701	Diversity in Non- Vascular Plants	3(2-2)
2	BOT-702	Plant and Cell Physiology-I	3(2-2)
3	BOT-703	Plant and Cell Physiology-II	3(2-2)
4	BOT-704	Phytosociology	3(2-2)
5	BOT-705	Plant Taxonomy and Embryology	3(2-2)
6	BOT-706	Diversity in Vascular Plants	3(2-2)
7	BOT-707	Plant Anatomy	3(2-2)
8	BOT-708	Mycology and Plant Pathology	3(2-2)
9	BOT-709	Plant Ecology	3(2-2)
10	BOT-710	Ethnobotany	3(2-2)
11	BOT-711	Environmental Pollution	3(2-2)
12	BOT-712	Research Planning and Report Writing	3(1-4)
13	BOT-720	Seminar	1(1-0)
Optional Courses			
14	BOT-713	Medicinal Plants of Pakistan	3(2-2)
15	BOT-714	Molecular Plant Development	3(3-0)
16	BOT-715	Phytogeography	3(2-2)
17	BOT-716	Research Techniques and Instrumentation	3(2-2)
18	BOT-717	Phytohormones	3(2-2)
19	BOT-718	Arid Zone Ecology	3(2-2)
20	BOT-719	Special Problem	1(1-0)

S. No.	Course	Title	Credit
21	BOT-720	Seminar-I	1(1-0)
22	BOT-720	Seminar-II	1(1-0)
23	BOT-721	Stress Physiology	3(2-2)
24	BOT-722	Plant Nutrition	3(2-2)
25	BOT-751	Advance in Biotechnology	3(3-0)
26	BOT-724	Molecular Basis of Morphogenesis	3(3-0)
27	BOT-725	Molecular Advances in Phytosystematics	3(3-0)
28	BOT-726	Environmental Toxicology and Bioremediation	3(2-2)
29	BOT-727	Environmental Biotechnology	3(3-0)
30	BOT-728	Principles of Genome Analysis and Genomics	3(3-0)
31	BOT-729	Biology of Halophytes	3(2-2)
32	BOT-730	Environmental Plant Physiology	3(2-2)
33	BOT-731	Conservation and Management of Plant Resources	3(1-4)
34	BOT-732	Plant Proteomics	3(2-2)
35	BOT-733	Physiological Genetics of Plants	3(3-0)
36	BOT-734	Forensic Botany	3(3-0)
37	BOT-735	Plant-microbe Interactions	3(2-2)
38	BOT-736	Plant systematic	3(2-2)
39	BOT-737	Applied Ethnobotany	3(2-2)
40	BOT-751	Integrated Biological Resource Management	3(3-0)
All courses offered for M. Sc. Programs can be offered to the Ph. D. students, depending upon their requirements			

Curriculum course requirement for M. Sc./M. Phil./Ph. D degree is summarized in the following table, whereas , their detailed description is also provided at end of report.

Standard 2.1: Assessment of the Curriculum of Botany Department

The assessment of curriculum is done in the following table and the courses are cross tabulated according to the program out comes.

Meeting Standard 2.1: Courses versus Program Outcomes

Table 7: Course vs. Program Outcome

	OUTCOMES			
COURSE	1	2	3	4

BOT 728	**	**	***	**
BOT 731	***	**	**	***
BOT 737	***	***	**	***
BOT 721	**	**	***	**

* = **Relevant**

** = **Relevant and satisfactory**

*** = **Very relevant and satisfactory**

- The curriculum fits well and satisfies the core requirements for the program, as specified the respective accreditation body.
- The curriculum satisfied the general arts and professional and other discipline required for the program according to demands and requirements set by the higher education Commission.

Standard 2-2: Elements Vs Courses

Meeting standard 2-2: Percentage of Elements in Courses

Elements	Courses
Theoretical backgrounds	BOT-701, BOT-702, BOT-703, BOT-704, BOT-705, BOT-706, BOT-707, BOT-708, BOT-709, BOT-710, BOT-711, BOT-713, BOT-714, BOT-715, BOT-717, BOT-718, BOT-721, BOT-722, BOT-723, BOT-724, BOT-725, BOT-726, BOT-727, BOT-728, BOT-729, BOT-730, BOT-732, BOT-733, BOT-735, BOT-738
Problem analysis	BOT-712, BOT-736, BOT-737, BOT-751
Solution designs	BOT-716, BOT-719, BOT-720, BOT-731, BOT-734, BOT-799

Standard 2-3

The curriculum for the core courses is designed as per requirements as approved by HEC.

Standard 2-4

The curriculum meets major requirements as approved by HEC.

Standard 2-5

There standard has been answered in table 4.4 as directed in manual.

Standard 2-6

Internet, software, online for research activity (Journal record etc.)
Bio-information software GIS, statistical analysis.

Standard 2-7

Enhancing Oral and written Communication Skills of the students

- Skill is developed through seminars, assignment and presentation by the faculty in their respective courses.

SECTION 3

Criterion 3: LABORATORIES AND COMPUTING FACILITIES

There are four Laboratories in the department. The facilities and shortcomings of these laboratories are listed as under.

LAB-1

Laboratory title	<i>Plant Ecology Lab.</i> (for the graduate and post graduate students)
Location and Area	Faculty of Sciences, Department of Botany, 1 st floor, New Academic Block.
Objectives	Laboratory is used for ➤ Research work for the graduate and post graduate students. ➤ Practical exercise and demonstration to master students in their introductory and major courses. ➤ Laboratory is spacious and adequate for research and teaching. ➤ Used for implementing the funded projects by the university, HEC, PSF, PARC and other agencies.
Major apparatus vizequipments	Microscopes, thermograph, EC meter, pH meter, electric balance, sieve shaker, refrigerator, vacuum pump, oven and pH meter etc.
Safely	Safely measures are unavailable against fire (extinguisher), minor hazards

Regulations	and accidents, injuries (First Aid Kit). However, the university maintains a Medical Dispensary for such incidents.
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LAB-2

Laboratory title	<i>Plant Physiology Lab</i> (for the graduate and post graduate students)
Location and Area	Faculty of Sciences, Department of Botany, 1 st floor, New Academic Block. .
Objectives	Laboratory is used for ➤ Implementing the funded projects by the university, HEC, PSF, PARC and other agencies. ➤ Research work for the graduate and postgraduate research fellows. ➤ Practical exercise and demonstration to master students in their introductory and major courses. ➤ Laboratory is spacious and adequate for teaching as well as research purpose.
Major apparatus size equipments	UV visible spectrophotometer, water potential apparatus, Refrigerators, pH meter, EC meter, Osmometer, Leaf area meter, oven, Microscopes, elective balance, etc
Safely Regulations	Safely measures are unavailable against fire (extinguisher), minor hazards and accidents, injuries (First Aid Kit). However, the university maintains a Medical Dispensary for such incidents.

LAB-3

Laboratory title	<i>Molecular Mycology Lab.</i> (For the master and post graduate research scholars.)
Location and Area	Faculty of Sciences, Department of Botany, 1 st floor, New Academic Block. .

Objectives	Laboratory is used for ➤ Implementing the funded projects by the university, HEC, PSF, PARC and other agencies. ➤ Laboratory is spacious and adequate. ➤ Practical exercise and demonstration to master students in their introductory and major courses. ➤ Research work for the graduate and post graduate research scholars.
Major apparatus vizequipments	Autoclave, Test tube mixer, deep freezer, refrigerators, elective balance, HPLC, research microscopes, Phase contrast Microscope, Electrophoresis, Laminar Flow, etc.
Safely Regulations	Safely measures are unavailable against fire (extinguisher), minor hazards and accidents, injuries (First Aid Kit). However, the university maintains a Medical Dispensary for such incidents.

LAB-4

Laboratory title	<i>Plant Taxonomy &Ethnobotany Lab.</i> (For the master and post graduate research scholars.)
Location and Area	Faculty of Sciences, Department of Botany, 1 st floor, New Academic Block. .
Objectives	Laboratory is used for ➤ Laboratory is spacious and adequate for undertaking research and teaching in the relevant field. ➤ Practical exercise and demonstration to master students in their introductory and major courses. ➤ Used for implementing the funded projects by the university, HEC, PSF, PARC and other agencies. ➤ Research work for the graduate and post graduate research scholars.

Major apparatus vizequipments	Dissecting microscope, deep freezer, electric balance, microscopes, sieve shaker, refrigerator, Hotplate, pH and EC meter, plant pressers, stereomicroscope etc.
Safely Regulations	Safely measures are unavailable against fire (extinguisher), minor hazards and accidents, injuries (First Aid Kit). However, the university maintains a Medical Dispensary for such incidents.

Standard 3-1: Laboratory Manuals:

- Individual teachers have prepared some manuals but in general there is a lack of laboratory manual of each subject on account of absence of department Library.
- The equipments are fairly sufficient however; instruments regarding molecular approaches are lacking e.g. refrigerated centrifuge, PCR Spectrophotometer.

Standard 3-2: Support/Laboratory Personal for Maintenance of Laboratory

Laboratories are maintained by only one laboratory assistant (equipment, glassware, chemicals, material etc). Three laboratories attendants assist students in practical, cleaning and washing.

Standard 3-3: Computing Infrastructure and Facilities

Computer facilities are insufficient and not available to all faculty members and the postgraduate students.

However the department has the following shortcomings/ problems:

- Majority of the faculty members do not have access to the PCs as department have only one Computer provided by the university.
- IT issues, virus problems, telephone sets / connections?
- Not availability of internet facility

SECTION 4:

Criterion 4: Student Support and Advising

Departmental Orientation

All newly admitted students are given orientation session at departmental level. It covers orientation about semester system, introduction of faculty and staff and use departmental facilities and services.

Student Advisor

One of the faculty members is deputed as student advisor. The services provided by the student advisor are:

- Organization of function at departmental level
- Solving students problems (personal and academic)

- Providing general assistance

Standard 4-1: Required courses outside the department

- Courses are taught as per approved scheme of study.

Required courses outside department

Optional Courses			
1	BCH-701	Biochemistry	3(2-2)
2	STAT-700	Elements of Statistics and Biometry	3(3-0)
3	BIOL-704	Molecular Biology	3(2-2)
4	BIOL-701	Cellular Biology	3(2-2)
5	BIOL-728	Concepts of Genetics	3(2-2)
6	ZOO-751	Project Planing, Monitoring and Evaluation	3(3-0)
7	STAT_702	Advance experimental design with Data Processing	3(2-2)
8	BCH-751	Advances in Biotechnology	3(3-0)

Standard 4-2: Structure of the Courses

The majority of the courses are divided into two major aspects: Theoretical and Practical.

Theoretical portion covered in teaching, assignments and presentations.

Practicals aspects are covered by performing experiments in Labs and fields. In order to update students about the latest developments in study area visits to various research organization areas is also organized.

Standard 4.3: Guidance to the Students

There is a strong and regular communication between student advisors and students to discuss about program requirements. Regular interaction between student and teacher supports advising and counseling system.

There is student councilor in department who solves the problems of students on weekly base.

	Question	Comments by Students
1	Please outline details of your progress in your research since your last review	Ph.D. students collaborated with foreign faculty through IRSIP program and published various research papers,
2	Do you have any comments on the level of supervision received?	Satisfied
3	What do you plan to achieve over the next six months?	Ph.Ds. are accomplished research projects for their degree.
4	Do you have any comment on generic or subject specialist training you may	Ph.Ds. have planned to get by HEC-IRSIP for 06 months abroad

	have received or would to like to receive internally or externally?	
5	Do you have easy access to sophisticated scientific equipment's?	Yes
6	Do you have sufficient research material/commodities available?	Yes

The results of this proforma showed that most of the research students are satisfied with their research activities. All of the students had access to sophisticated issues and have sufficient research material and commodities available. Research students have the motivation to increase their research activities by applying through HEC-IRSIP

5: PROCESS CONTROLL

Standard 5.1: Admission Criteria for Each Program

- The process of admission well established and followed as per rules and criteria set by university. For this purpose an advertisement is given in the national papers by the Registrar office.
- Admission criteria:
 - **Ph. D.** (M. Phil with CGPA 3/4 or 1st division under annual examination system with International GRE must be cleared before submission of theses.
- It is based on the recommendations of supervisory committee
- Admission criteria are revised every year before the announcement of admissions.

Standard 5.2: Process of Registration and Monitoring of Students.

- The complete list of finally admitted candidate after fulfilling the admission criteria is to be forwarded to the registrar office for proper registration in the specific program. Registration numbers are issued to the students
- Students are registered once in a degree program.
- Mid, Final, Practical exams and assignments are used to monitor student progress.

Standard 5.3: Recruiting Process for Faculty

Recruitment policy for faculty followed by the University is as per HEC standard recommendation. New inductions are as follows:

- Vacant and newly created positions are advertised in the leading daily newspapers. Applications are received by the registrar office; call letters are issued to the short listed candidates on the basis of their experiences, qualification, publications and other qualities/ activities as fixed as per university rules.

- The candidates are interviewed by the university selection Board. Principal and alternate candidates are selected
- Selection of candidates is approved by the syndicate for issuing orders to join within a specified time period.
- Induction of new candidates depends upon the number of approved vacancies.
- Standard set by HEC are considered.

Retention of Excellent Faculty Members

- At present, no procedure exists for retaining highly qualified faculty members.
- HEC also supports appointment of highly qualified members as foreign faculty professor, National Professors and deposes them in various departments of the university.

Standard 5.4: Process and Procedure to Ensure Teaching and Delivery of Course Material

- Periodical revision of the curriculum helps high quality teaching. This revision is based upon requirements, innovations and new technology
- With the emergence of new fields, new courses are set and included in the curriculum
- Relevant and supporting material is available in university library
- Lecture aids are prepared by the teachers and given to the students.
- Most of the lectures are also supplemented by overheads, slides and pictures
- All efforts are made that the courses and knowledge imparted meet the objectives and outcomes. The progress is regularly reviewed in the staff meetings.

5.5. Completion of Program Requirements

- Announcement of the date of commencements examination by the controller of examinations announces.
- Notification of results after 30 days of the examinations finish, the controller office notifies the results of the students.
- The evaluation procedure consists of quizzes, mid and final examinations, practical formulas, assignments and reports, oral and technical presentation.

SECTION 6

Criterion 6: FACULTY

Standard 6.2: Effective Programs for Faculty Development

- Proficient implementation and accessibility of pleasing research and academic facilities are provided conferring to the faculty members.
- provided conferring to the faculty members.
- Incentives in the practice of allowances to thesis supervisors have been implemented lately to promote high standard research.

Standard 6.3: Faculty member motivation

- There is a calamitous necessity of motivation

Standard 6-1: Full Time Faculty

Table 8: Faculty Distribution by Program Areas in Botany

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
Taxonomy & Ethnobotany	6	2	1
Ecology	6	1	1
Physiology	8	1	1
Mycology and Plant Pathology	2	1	1
Tissue Culture	3	2	2
Total	25	7	6

Table 9: Faculty Specialization

S. No	Name	Position	Qualification	Specialization
1.	Dr. Muhammad Arshad	Professor	PhD	Plant Ecology
2.	Dr. Abida Akram	Professor	Ph.D.	Mycologist
3.	Dr. Rahmatullah Qureshi	Professor	PhD	Plant Taxonomy & Ethnobotany
4.	Dr. Noshin Ilyas	Assist Professor	PhD	Plant Microbiologist
5.	Dr. Naveed Iqbal Raja	Assist Professor	PhD	Tissue culture
6.	Dr. Yamin Bibi	Assist Professor	PhD	Phytochemistry
7.	Dr. Mubashra Munir	Assist Professor	PhD	Fresh water biologist
8.	Dr. Saira Asif	Lecturer	PhD	Tissue Culture
9.	Dr. Zia Ur Rehman	Assist Professor	PhD	Ethnopharmacology

S. No	Name	Position	Qualification	Specialization
	Mashwani			
10.	Dr, Malik	Assist Professor	PhD	Biosystematics and Biodiversity

SECTION 7

Criterion 7: Institutional Facilities

Standard 7-1 infrastructure

The institutional facilities are insufficient though the department has provided new space. These shortfalls are under:

- The department lack departmental library.
- Labs of the departemnt lack the gas supply
- There is only one lecture hall for all classes on departmental disposal and the remaining shared with other department.
- New Labs are also required.
- Upturn the department budget for research and experimentation.
- The Department lacks the computer and internet laboratory.

Standard 7-2 Library facilities

The university central library has very limited number of books, journals and periodical, it's a small library in term of space and facilities no catalogue systems; it does not meet the standards of a university library. Department itself does not have a library.

Standard 7.3 Class Room and Faculty Offices

- Faculty offices are inadequate.
- Shortage of lecture halls

Standard 8-1 Support and Financial Resources

At present department have a very insufficient financial resource to maintain the present needs of the department. Individual research grants for students and faculty are mainly supporting the departmental research activities. There is dire need of increasing the financial resources allocated to the department to establish a library, laboratories and computer facilities. Suggestions and factors that can contribute to the motivation to the faculty are given as follows:

- Research grants to the young faculty members.
- Discrimination should be discouraged at all levels.
- Sabbatical leaves for researches in the country and abroad.

Standard 8-2 High Quality Graduate Students and Research scholars

Graduate students are enrolled once in a year. However, PhD scholars are enrolled semester wise. A strict merit policy adopted and GRE/NTS examination is implemented. Lately, details of the students and research scholars are given following tables.

Table 12: Showing the Number of students obtaining degree in PhD programs from 2017-18.

STUDENTS	NOS	
	2019	2020
Ph. D.	25	19

Students: Faculty ratio	1:20	Fulfills HEC criteria
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Standard 8-3 Financial Resources:

Total budget of the department for the financial year 2014-16 is Rs. 55000/- (Fifty thousand rupees only) which hardly fulfills the departmental needs particularly for the purchase of necessary chemicals, etc.

Proforma 9**Faculty Resume**

Name	Prof. Dr. Abida Akram
Personal	CNIC No: 37405-2924797-2 Office Phone: 92-051-9292117 Cell No. 92-333-5320262 E-mail: abidauaar@hotmail.com abidaakram@uaar.edu.pk abidauaar@gmail.com Address: Department of Botany, Pir Mehr Ali Shah, Arid Agriculture University, Rawalpindi
Courses taught	<u>B.Sc (Hons)</u> • General Botany. • Plant Ecology • Plant Physiology <u>BS (Forestry)</u> • General Biology-1 • General Biology-II <u>M.Sc Botany</u> • Morphology of Non-Vascular plants, Bacteria and Virus • Environmental Pollution • Plant Physiology • Arid Zone Ecology • Economic Botany • Forensic Botany • Mycology and Plant Pathology • Plant Microbe Interactions <u>M.Sc Biology</u> • Environmental Biology • Biodiversity • Mycology and Plant Pathology <u>M.Phil. / Ph.D Botany & Biology</u> • Plant Microbe Interaction • Forensic Botany <u>M.B.A (Agri-business)</u>

	Biology
M. Phil thesis supervised	• Role of Plant based Nanoparticles on Growth of Wheat under Biotic Stress • Evaluation of Green Synthesized Silver Nanoparticles on Disease incidence Against Canker in Mandarin • Integrated impact of oil seed cakes and biocontrol agents for management of • Root Knot Nematodes • Aflatoxin contamination in Barley and its products. • Assessment of Aflatoxin in Wheat and its Associated products • Pathological evaluation of secondary metabolites produced by <i>Fusarium</i> sp. isolated from Sesame. • Impact of some abiotic factors on <i>in vitro</i> development of <i>Alternaria</i> sp. Isolated from Sesame • Establishment of an efficient protocol for plantlet's regeneration via direct and indirect organogenesis in <i>Vitis vinifera</i> L. • Pathological evaluation of secondary metabolites produced by <i>Alternaria</i> sp. isolated from Sesame • Study of some mushrooms collected from Islamabad for their antioxidant activity • Histopathological studies of sesame seedlings infected with <i>Alternaria</i> spp. • <i>In vitro</i> evaluation of different bio-agents against <i>Sclerotium rolfsii</i> Sacc. • Soil mycoflora of Bhoman Batth Tehsil Wazirabad, Gujranwala. • Assessment of antifungal efficacy of selected spices against <i>Aspergillus</i> spp. • Prevalence of fungal contamination in various drinking water sources. • Histopathological studies of chickpea seedling infected with <i>Sclerotium rolfsii</i> • Mycoflora associated with seeds of Sesame (<i>Sesamum indicum</i> L.) from Sialkot and its management • Molecular characterization of fungal isolates and aflatoxins contamination in chickpea flour • Evaluation of <i>Pongamia pinnata</i> products against the <i>Sclerotium rolfsii</i> extracted from chickpea.

	• Histopathological studies of chickpea seedling infected with <i>Fusarium</i> Spp. • Identification and ethnological study of mushrooms collected from Soon Valley • Effect of seed-born mycoflora of Lentil on their mycotoxin and nutritional profile • Nutritional profile, mycoflora assessment and aflatoxin contamination in chickpea • Molecular characterization of <i>Sclerotium rolfsii</i> Sacc. isolated from chickpea • Screening of Pothwar region grasses for their allelopathic effect • Evaluation of intraspecific relationship of <i>Solanum melongenna</i> L. and <i>Lycopersicon esculantum</i> Miller based on SDS-PAGE. • Evaluation of allelopathic activity of some leguminous plants • Preliminary screening of some higher plants for evaluation of their allelopathic potential.
Ph. D thesis supervised	• Isolation of <i>Alternaria</i> and <i>Fusarium</i> spp., their pathogenesis and Pathogenesis related proteins with Sesame (<i>Sesame indicum</i> L.) • Integrated management of mycotoxins in Red chilli. • Exploration of mechanism of action of <i>Aspergillus</i> and <i>Fusarium</i> spp. in Sesame. • Isolation and characterization of toxigenic and atoxigenic strains of <i>Aspergillus flavus</i> in maize. • QTL Mapping of <i>Aspergillus flavus</i> resistance in Chilli (<i>Capsicum annum</i>).
Ph. D thesis co-supervised	Nil
Publications (Non impact factor)	• Nayyar, B. G., A. Akram, S. Akhund, W. Seerat and S. Sadia. 2016. Comparative Efficacy of physico-chemical and biological treatments on seed germination and mycoflora of <i>Sesamum indicum</i> L. Sc., Tech. and Dev. 35 (4): 171-178. • Sultana, K., M.I. Bhatti, A.Akram, G.Irshad, M.I.Mastoi and

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	to the synergistic & growth regulations. Asian J. Plant Sci. 2(13): 974-977. • Asghar, R., M. Ahmad, M. Zafar, A. Akram, J. Mahmood and M. Hassan. 2003. Antibacterial efficiency of <i>Acacia modesta</i> Wall Miswak Against dental Pathogen. Pak .J Boil. Sci. 6(24): 2024-2025 • Bokhari, S. Y.A., Zafar, M., M.A. Tariq. and A. Akram.2003. Taxonomical description and ethno-botanical survey for indigenous use of some medicinal plants of Rawalpindi District. As. J. of pl. Sci. 2(6): 475-479. • Arshad, M. and A. Akram. 1999. Soil Fertility Problems in Central Rachna Doab. Pak. Journal Biol. Sci. 2 (4): 1355-1357.
Research Interest	• Mycology & Plant Pathology • Morphological & Genetic variability in Fungi • Mycoflora and Mycotoxins Management • Characterization of Oyster mushrooms • Fungal Secondary Metabolites • Antimicrobial activity of Plants & Bioagents
Impact factor Publications	• Laala, G., M. U. Raja, S. R. A. Gardezi, G. Irshad, A. Akram and I. Bodlah. 2019. Study of macro fungi belonging to order agaricales of Poonch District Azad Jammu and Kashmir (AJK). Pure Appl. Biol. 8(1): 27-33. • http://dx.doi.org/10.19045/bspab.2018.700160 • Nayyar, B. G., S. Woodward, L. A. J. Mur, A. Akram, M. Arshad, S. M. S. Naqvi, S. Akhund. 2018. Identification and pathogenicity of Fusarium species associated with sesame (<i>Sesamum indicum</i> L.) seeds from the Punjab, Pakistan Physiological and Molecular Plant Pathology (102) 128-135. Impact Factor 1.395 • Akram, A., P.Amber, S. M. Iqbal, R. Qureshi, A. Javed, S. Mukhtar. 2017. RAPD based characterization of chickpea isolates of <i>Sclerotium rolfsii</i>. Pak. J. Bot., 49(5): 2015-2022. Impact. Factor 0.69 • Akhund, S., A. Akram, N. Q. Hanif, R. Qureshi, F. Naz, B. G. Nayyar. 2017. Pre-harvest aflatoxins and <i>Aspergillus flavus</i> contamination in variable germplasms of red chillies from Kunri, Pakistan. Mycotoxin Res. 33:147–155. • DOI 10.1007/s12550-017-0274-1. Impact factor 2.00 • Ara A., A. Akram, M. Ajmal, S .Akhund, B.G. Nayyar, BG W. Seerat and S. Mukhtar. 2017. Histopathological studies of

	sesame (<i>Sesamum indicum</i> L.) seedlings infected with <i>Fusarium oxysporum</i>. Pl. Path. & Quar. 7(1): 82–90 (2017) • Hussain, M. N. I. Raja, A. Akram, A. Iftikhar, D. Ashfaq, F. Yasmeen, R. Mazhar, M. Imran, M. Iqbal. 2017. A status review on the pharmacological implications of <i>Artemisia absinthium</i>: A critically endangered plant. Asian Pac. J. Trop Dis; 7(3): 185-192 • Shabbir, Z., S. Latif, S. Talib, M. Hussain, M. Ali, M. W. Yasir, A. Akram, U. M. Quraishi. 2017. Exploring novel diversity for biofortification in Elite D-genome synthetic hexaploid wheat (AABBDD). Int. J. Biosci. 1(1) 100-108. Impact factor 0.553 • Akhund. S., A. Akram, R. Qureshi, F. Naz, N. Q. Hanif, B. G. Nayyar. 2016. Natural occurrence of multiple fungi in variable germplasms of red chillies from Kunri, Pakistan, Int. J. Biosci. 9 (6) 213-225. Impact factor 0.553 • Sabir, S., A. Akram, N. I. Raja, Z. R. Mashwani, Sohail, H. M. Sadaf, M. Hussain, I. Riaz, N. Ahmad and E. Ahmed. 2016. A probe into the medicinal potential of <i>Viola canescens</i> – A threatened medicinal plant from Himalaya. J. Coas. L. Medi. 2016; 4(7): 575-579. • Qureshi, H., M. Arshad, A. Akram, N. I. Raja, S. Fatima and M. S. Amjad . 2016. Ethnopharmacological and phytochemical account of paradise tree (<i>Melia azedarach</i> L.: Meliaceae). Pure Appl. Biol., 5(1): 5-14. • Seerat, W., A. Akram, R. Qureshi, J. Asad, S. Akhund, B. G. Nayyar. 2016. The potential of some spice extracts for controlling <i>Aspergillus</i> species. Int. J. Biosci. 8(5), 96-104. Impact factor 0.553 • Ajmal, M., A. Akram, A. Ara, S. Akhund, B. G. Nayyar, W. Seerat. 2016. Stem histopathology of sesame seedlings infected with <i>Alternaria alternata</i>. Microscopy Research 4, 11-19. 33. Impact factor 0.75 • Nayyar, B. G., A. Akram, S. Akhund, W. Seerat and S. Sadia. 2016. Proteomics applied to plant defense mechanism: Role of pathogenesis-related proteins in disease defense. Nature and Science, 14(3)21-33 • Mushtaq, S., A. Akram, R. Qureshi, Z. Akram, N. Qudsia, S. Akhund and B. G. Nayyar. 2015. Natural incidence of Aflatoxins, mycological profile and molecular characterization of aflatoxigenic strains in chickpea flour.
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	Pakistan. Pak. J. Bot., 47(3): 1153-1160. I. Factor 1.207 • Fatima.S., A.Akram, M.Arshad, S.K.Chaudhri, M.S.Amjad and H.Qureshi. 2014. Effect of biological potassium fertilization (BPF) on availability of phosphorus and potassium to maiz (<i>Zea mays</i> L.) under controlled conditions. I. J. of Biosc. (IJB) 8(5):25-36 Impact factor 0.553 • Nayyar, B. G., A. Akram ,S. Akhund and M. Rafiq, 2014. Short Communication: Seed Viability Test and Pathogenecity Assessment of Most Prevalent Fungi Infecting <i>Sesamum indicum</i> L. J. of Pharm. & Bio. Sc. (IOSR-JPBS) 9(5): 21-23 Impact factor 1.12 • Nayyar, B. G., S. Akhund and A. Akram, 2014. A review: management of <i>Alternaria</i> and its mycotoxins in crops. Scho. J. Of Agri. Sc.4(7): 432-437. Impact factor 1.3725 • Shaheen. H., R. Qureshi., A. Akram, M. Gulfraz . 2014. Inventory of medicinal flora from Thal Desert, Punjab, Pakistan. Afr. J. Tradit. Complement Altern Med. 11(3):282-290 Impact factor 0.71 • Shaheen. H., R. Qureshi., A. Akram, M. Gulfraz and D. Potter. 2014. A prelimnary floristic checklist of Thal desert Punjab, Pakistan. Pak. J. Bot., 46(1): 13-18. Impact factor 1.207 • Batool, S., M. Gulfraz, A. Akram, S.M. S. Naqvi, I.Haq, B. Mirza and M. S. Ahmad. 2014 Evaluation of antioxidant potential and HPLC based identification of phenolics in <i>Polygonum amplexicaule</i> extract and its fractions. Pak. J. Pharm. Sci. • Farooq, M., A. Akram, R. Afazal and K. Sultana. 2013. Ethno Morphological Studies of Mushrooms Collected From Soon Valley. IOSR J. Phar. & Bio Sc. 8(5) 05-11 Impact factor 1.138 • Nayyar, B. G., A. Akram, M.Arshad, S.M. Mughal, S. Akhund and S. Mushtaq. 2013. Mycoflora detected from seeds of <i>Sesamum indicum</i> L.in Sialkot, Pakistan. IOSR J. Phar. & Bio Sc.7(3) 99-103. Impact factor 1.138 • Razzaq,A., M. Arshad, S. Ashraf, A. Akram, A. Qayyum and I. Mahmood. 2013. Evalution of Psyllium Husk (<i>Plantago ovata</i>) as a low cost gelling for callus formation and regeneration in wheat (<i>Triticum aestivum</i> L.) cultivar GA-2002. Wul. J. Klagenfurt, Austria. 20(7)153-161. Impact factor 0.467 • Bano, Q., N. Ilyas., A. Bano., N. Zafar. A. Akram and F.
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	Hassan. 2013. Effect of <i>Azospirillum</i> inoculation on maize (<i>Zea mays</i> L.) under drought stress. Pak. J. Bot., 45(SI): 13-20. Impact factor 1.207 • Amber, P., A. Akram, R. Qureshi and Z. Akram. 2012. HPLC analysis for secondary metabolites detection in <i>Sclerotium rolfsii</i> isolated from chickpea. Pak. J. Bot., 44: 417-422. Impact factor 1. • Jabeen, Z., A. Riaz, K. sultana., A. Akram, M. Ansar., I. Hassan and I. Ahmad. 2012. Incidence of <i>Aspegillus flavus</i> and extent of aflatoxin contamination in peanut samples of Pothwar region of Pakistan. Afr. J. Micro. Res. 6 (9):1942-1946. Impact factor 0.539 • Shaheen. H., R. Qureshi., A. Akram and M. Gulfraz. 2012. Some important medicinal flora of Noorpur Thal, Khushab, Pakistan. Arch. Des Sc. 2(65):57-73. Impact factor 0.536 • Ahmad, M. A., S. M. Iqbal, N. Ayub, Y. Ahmad and A. Akram. 2010. Identification of resistant sources in chickpea against <i>Fusarium</i> wilt. Pak. J. Bot., 42 (1): 417-426 Impact factor 0.69 • Ali, S. R., S. M. Iqbal, U. Iqbal, A. Ghafoor and A. Akram. 2009. Pathogenic diversity in <i>Ascochyta rabiei</i> (PASS.) of chickpea. Pak. J. Bot., 41 (1): 413-419. Impact factor 0.69 • Akram, A., S. M. Iqbal, N. Ahmad, U. Iqbal and A. Ghafoor. 2008. Morphological variability and mycelial compatibility among the isolates of <i>Sclerotinia sclerotiorum</i> associated with stem rot of chickpea. Pak. J. Bot., 40(6): 2663-2668. Impact factor 1.207 • Akram, A., S. M. Iqbal, C. A. Rauf and R. A. Qureshi. 2008. Detection of resistant sources for collar rot disease in chickpea germplasm. Pak. J. Bot., 40 (5): 2211-2215. Impact factor 0.69 • Akram, A., S. M. Iqbal., R. A. Qureshi and C. A. Rauf. 2008. Variability among isolates of <i>Sclerotium rolfsii</i> associated with collar rot disease of chickpea in Pakistan. Pak. J. Bot., 40 (1): 453-46. Impact factor 0.69 • Akram, A., M. Fatima., S. Ali, G. Jilani and R. Asghar. 2007. Growth, yield and nutrients uptake in response to integrated phosphorus and potassium management. Pak. J. Bot., 39 (4): 1083-1087. Impact factor 1.207 • Ghulam, J., A. Akram, R. M. Ali, Fauzia, Hafeez, H. Imran, Shmasi, A. Nawaz & A. Gafoor. (2007). Enhancing crop
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	growth, nutrients availability, economics & Beneficial rhizosphere microflora through organic and bio-fertilizers. Annals of Microbiology. 2(57) 177-183 Impact factor: 1.549
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Personal	PMAS ARID AGRICULTURE UNIVERSITY, MURREE ROAD, RAWALPINDI PAKISTAN. E. Mail: arshad2uaar @ yahoo.com H. No. 12, UNIVERSITY COLONY NO. 2, PMAS ARID AGRICULTURE UNIVERSITY, MURREE ROAD, RAWALPINDI PAKISTAN. Off: 051-9062207
Courses taught	• Ethnobotany • Medicinal Plants of Pakistan • Phytosociology • Plant Ecology • Plant Taxonomy and Embryology
M. Phil thesis supervised	1. To determine the potential role of Zink oxide nanoparticles on germination, growth and yield of wheat. 2. To determine the effects of Iron nanoparticles on the growth and photosynthetic efficiency of wheat. 3. Botanical Demography and traditional uses of plants of kaghan velley. 4. Phytochemical screening and analysis of redox protective activities of <i>Gymnosporia royleana</i>. 5. Comparative effect of Ca, K, and B for alleviation of drought Stress in Durum wheat. 6. Screening some varieties of durum wheat for adaptation to Salinity stress. 7. Ethno pharmacological application of medicinal plants among the women of Tehsil Nagar District Hunza , Pakistan •
Ph. D thesis supervised	• QTL Mapping for metabolic and Molecular attributes of Drought Tolerance in Wheat (<i>Triticum aestivum</i> L.). (Samar Fatima Ph.D.completed in 2014). • Improvement of wheat for drought tolerance through genetic engineering (M. Khalidcompleted in 2014) • Morphological and Biochemical adaptation of local cultivar of Barley (<i>Hordeum vulgare</i> L.) under drought. (Rehana Kouser Ph.D.completed in 2015).

	• Taxonomic, Phytochemical and Biological screening of some selected Medicinal Plants of lesser Himalaya Region of Pakistan.(Ejaz Ahmed in progress) • Association mapping for drought tolerance in diverse bread wheat germplasm. .(Sunbel Khalil Chaudhari Thesis submitted) • Ecological Evaluation of Vegetation Structure and Diversity in District Kotli Azad Jammu and Kashmir. .(M Shoaib in progress) • Ecobiological and phytochemical characterization of selected invasive plants of Pothwar Region. .(Huma Qureushi in progress). • Evaluating antimicrobial and anti-oxidant potential of green silver and copper Nano particles in wheat.(Sidra Saber in progress). •
Ph. D thesis co-supervised	1. The Ecology of Algal Flora from Kallar Kahar Lake and its associated tributaries. (Mubashrah Muneer Ph.D.completed in 2014). 2. Salicylic acid induced Adaptive Response of Sunflower <i>Helianthus annuus</i> L. Under drought stress. (Husn –e- Sahar Zaidi Ph.D.completed in 2015). 3. QTL mapping of Drought mapping population Derived from bread wheat cultivar opata and synthetic Hexaploid. (Mamoona Ilyas Ph.D.completed in 2014). 4. Studies On Seed and integrated control practices for <i>Circium arvense</i> in rainfed wheat(Ramzan Ansar Ph.D.completed in 2015). 5. Phytosociological and Ethnobotanical appraisal of Swat Valley with reference to Biodiversity and Conservation. (M. Ilyas Ph.D.completed in 2015).

	6. Phytosociology, floral diversity and conservation status of Murree-Kotli Sattian-Kahuta National Park. (M. Waseem In Progress) 7. Exploration of mechanism of action of <i>Aspergillus</i> and <i>Fusarium</i> spp. in sesame (Brine Gagosh inprogress} 8. QTL Mapping of Physiological attributes of salt tolerance in wheat RILs population. 9. Transgenic <i>Citrus reticulata</i> plant production for fungal disease resistance using chitinase gene and its subsequent physiological and molecular characterization (Mubashir Hussain). 10. Bioactivity guided assessment of some selected medicinal plants of Malakand Division. (Gul Raheem Ph.D. completed in 2014). 11. Assessment of antimicrobial, antioxidant activities and phytochemical screening of <i>Leptodenia pyrotechnica</i>. (Mehmooda Manazer Ph.D. completed in 2015). 12. Phytoecology and vegetation diversity of Muzarabad Division Azad Jammu and Kashmir (Arshad Mahmood Khan In Progress) 13. Biological Evaluation of Phospholipids Complexes from Extract of <i>Bistorta amplexicaulis</i> (Salma Batool In Progress). 14. Isolation and Characterization of potential
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	anticancer compounds <i>from Bistorta amplexicaulis</i> . (Shehzadi Tabasum In Progress). 15. Detection of Sequence Composition of Begomoviruses associated with leaf curl disease of Capsicum (Samina Yasmin In Progress). 16. Isolation, Characterization and Assessment of Bioactivity of Secondary Metabolites from <i>Berberis lyceum</i> Royle . (M .Asad Anwer thesis submitted). 17. Identification and Characterization of Antioxidant and Cytotoxic Activities of Selected Medicinal Plants of Gallyat Region. (M Ishaq In Progress) 18. Amelioration of heavy metal stresses by inoculation with tolerant PGPR and Biochar. (Roomina Mazhar In Progress) QTL Mapping of <i>Aspergillus flavus</i> resistance in Chilli (<i>Capsicum annuum</i>). (Zunera Shabbir In Progress). 19. In Progress). 20. Bioremediation of crude oil contaminated soil with PGPR and Biochar for sustainable production of maize. (In Progress). 21. Bioassay guided assessment of some selected medicinal plants of salt range Pakistan. (Huma Mehreen In Progress). 22. Effect of bioorganic fertilizer containing PGPR prepared from waste protein on maize. (Fatima Bibi in progress). 23. Evaluation of plant extract based strategy for food bio preservation. (Nadia Sardar in progress).
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Publications (Non impact factor)	1. Amjad M. S., M. Arshad, S. Fatima, and N. Mumtaz. 2014. Palatability and Animal Preferences of Plants in Tehsil Nikyal, District Kotli, Azad Jammu and Kashmir Pakistan. <i>Annual Research and Review in Biology</i>. 4(6)953-961 2. Sehar, H., A. waheed, Jalal-ud-Din, M. Arshad, A. Razzaq. 2014. Evaluation of Sunflower hybrids to drought stress at germination and seedling growth stages. <i>International journal of Scholarly research gate</i>. 2(2): 1-12. 3. Sadaf, H.M; Y. Bibi, M. Arshad and M. S. Amjad. 2014. Status of Maiden Hair Tree <i>Ginkgo biloba</i>; Living Fossil becoming Endangerd. <i>Nova Journal of Medical and Biological Sciences</i>. 2(7)1-5. 4. Qureshi, H; M. Arshad and Y. Bibi 2014 Toxicity assessment and phytochemical analysis <i>Broussonetia papyrifera</i> and <i>Lantan camara</i> . Two notorious invasive plant species. <i>Journal of Biodiversity and Environmental Sciences</i>5 (2):508-517 5. Amjad, M. S. and M. Arshad. 2014. Ethnobotanical inventory and medicinal uses of some important woody plant species of Kotli, Azad Kashmir, Pakistan. <i>Asian Pac. J. Trop. Biomed (Elsevier)</i>., 4(12): 952-958 6. Masood M;, S., M. Arshad, S. Asif and S. K. Chaudhari. 2014. <i>Viola canascens</i> Herbal wealth to conserved. <i>Journal Of Botany</i>. 2014: 1-6 7. Ahmed, E., Y. Bibi, M. Arshad and K. Ullah. 2014. Conservation status of <i>Taxus floridana</i>, a critically endangered evergreen coniferous plant. <i>Pure and applied biology</i>. 3(4): 188-191. 8. Amjad, M. S., M. Arshad and R. Qureshi. 2015. Ethnobotanical inventory and folk uses of indigenous plants from Pir Nasoora National Park, Azad Jammu and Kashmir. <i>Asian Pac. J. Trop. Biomed (Elsevier)</i>., 5(3): 234-241. 9. Saboon, Y. Bibi, M. Arshad, N. Ahmad, I. Riaz, S. K. Chaudhari. 2015. An insight into medicinal and ethnopharmacological potential of <i>Crotalaria burhia</i>. <i>Asian Pac. J. Trop. Dis</i>. 5(7): 511-514. 10. Tahir, Z., M. Arshad and S. K. Chaudhari. 2015. Redox protective potential of fruits and vegetables: A review. <i>Journal of Coastal Life Medicine</i>. 3(8): 663-668.

	11. Amjad, M. S., H. Qureshi, M. Arshad, S. K. Chaudhari, M. Masood. 2015. The incredible queen of green: Nutritive value and therapeutic potential of <i>Moringa oleifera</i> Lam. <i>Journal of Coastal Life Medicine</i>. 3(9): 744-751. 12. 76. Sabir, S., R. Qureshi, M. Arshad, M. S. Amjad, S. Fatima, M. Masood, Saboon and S. K. Chaudhari. 2015. Pharmacognostic and clinical aspects of <i>Cydonia oblonga</i>: A review. <i>Asian Pacific Journal of Tropical Disease (Elsevier)</i>. 5(11): 850-855. 13. Akhtar, S., Y. Kakei, K. Bashir, A. Shahzad, T. Yamakawa, M. Arshad, Fayyaz- Ul-Hassan, H. Nakanishi and N. K. Nishizawa. 2015. Characterizing the expression of genes involved in iron transport in Pakistani peanut varieties under iron deficiency stress. <i>Turkish Journal of Botany</i>. 39:996-1007. 14. Amjad, M. S., M. Arshad, H. M. Sadaf, Durre. Shahwar, F. Akrim and A. Arshad. 2016 Floristic composition, biological spectrum and conservation status of the vegetation in Nikyal valley Azad Jammu and Kashmir.. <i>Asian pacific journal of Tropical Diseases (Elsevier)</i>., 6(1)63--69 15. Saboon, Y. Bibi, M. Arshad, S. Sabir, M. S. Amjad, E. Ahmad and S. K. Chaudhari. 2016. Pharmacology and biochemistry of <i>Polygonatum verticillatum</i>: A review. <i>Journal of Coastal Life Medicine</i>, 4(5): 406-415. 16. Sabir, S., M. Arshad, M. Hussain, H. M. Sadaf, Sohail, M. Imran, F. Yasmeen, Saboon and S. K. Chaudhari. 2016. A probe into biochemical potential of <i>Aconitum violaceum</i>: A medicinal plant from Himalaya. <i>Asian Pacific Journal of Tropical Disease, (Elsevier)</i>., 6(6): 502-504.
Research Interest	Plant Ecology; Phytosociology; Plant Biosystematics; Plant Taxonomy; Medicinal Plants; Ethnobotany.
Impact factor Publications	Impact Factor Publication 1. Qureshi, H., M. Arshad and Y. Bibi 2014 Invasive flora of Pakistan A Criticle Analysis. <i>International journal of Bioscience</i>, 4 (1), 407-424 (Impact factor = 0.076). 2. Arshad M., M. Ahmad, E. Ahmad, A. Saboor, A. Abbas, and S. Sadiq,. 2014. An ethnobiological study in Kala Chitta hills of Pothwar region, Pakistan:

	multinomial logit specification <i>Journal of Ethnobiology and Ethnomedicine</i>, 2013, 10 (13):1-17 (Impact factor = 2.42) 3. Chaudhari, S. K., Y. Bibi and M. Arshad 2014 <i>Podophyllum hexandrum</i>: An endangered medicinal plant from Pakistan. <i>Pure and Applied Biology</i>, (3):1, 19-2 (Impact factor = 0.365). 4. Fatima, S., M. Arshad and R. Qureshi. 2014. QTL mapping for physiological maturity in synthetic hexaploid wheat (<i>Triticum aestivum</i> L.) under drought stress. <i>Pure and Applied Biology</i>, (3):1, 25-31(Impact factor = 0.365). 5. Chaudhari, S. K., M. Arshad, G. Mustafa , S. Fatima, M. S. Amjad and F. Yasmin 2014 Foliar epidermal anatomy of grasses from Thal Desert, District Khushab Pakistan. <i>International Journal of Biosciences</i>, (4):8, 62-70 (Impact factor = 0.076). 6. Bano, A., M. Ahmad, T. B. Hadda, A. Saboor, S. Sultana, M. Zafar, M. P. Khan, M. Arshad and M. A. Ashraf 2014. Quantitative ethnomedicinal study of plants used in the skardu valley at high altitude of Karakoram-Himalayan range, Pakistan <i>Journal of Ethnobiology and Ethnomedicine</i>, 10 (43):1-17 (Impact factor = 2.42). 7. Sabir, S., M. Arshad, S. Asif and S. K. Chaudhari. 2014. An insight into medicinal and thraupeutic potential of <i>Silybum marianum</i> (L) Gaertn. <i>International Journal Of Biosciences</i>, 4(11):104-115 (Impact factor = 0.076). 8. Fatima, S. and M. Arshad 2014 Mapping quantitative trait loci of morphological attribute using drought mapping population 5 (Opata x SH349) under drought stress. <i>International Journal of Biosciences</i>, 4(12):134-143 (Impact factor = 0.076). 9. Fatima, S., M. Arshad, S. K. Chaudhari, A. Ali, M. S. Amjad and R. kousar. 2014 Utilization of synthetics for drought tolerance in wheat <i>Triticum aestivum</i> L. <i>International Journal of Biosciences</i>, 5(1):104-112 (Impact factor = 0.076). 10. Ali, A., M. Arshad, S. M. S. Naqvi, M. Ahmed, H. Sher, S. Fatima, A. G. Kazi,,A. Rasheed, A. Mujeeb-Kazi. (2014) Exploitation of Synthetic- derived Wheat's through osmotic stress responses for drought tolerance improvement. <i>Acta Physiol Plant</i> (Springer), (Impact factor = 1.58). 11. Sabir, S., M. Arshad, K. Zahara, S. Tabassum and S.
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	K. Chaudhari, 2014 Pharmacological attributes and nutritional benefits of tea tree oil. International Journal of Biosciences, 5(2):80-91 (Impact factor = 0.076). 12. Sabir, S., M. Arshad and S. K. Chaudhari. 2014. Zinc Oxide Nanoparticles for Revolutionizing Agriculture: Synthesis and Applications. Scientific world journal (Hindawi). 2014: 1-8. (Impact factor = 1.2). 13. Amjad, M. S., M. Arshad, S. K. Chaudhari. 2014. Structural diversity, its components and regenerating capacity of lesser Himalayan forests vegetation of Nikyal valley District Kotli (A.K), Pakistan. Asian pacific journal of Tropical Medicine (Elsevier), 7(Suppl 1): S454-S460. (Impact factor = 1.2). 14. Amjad, M. S., M. Arshad, A. Rashid, S. K. Chaudhari, N. Z. Malik and F. Akrim. 2014. Examining relationship between environmental gradients and lesser Himalayan forest vegetation of Nikyal valley, Azad Jammu and Kashmir using ordination analysis. Asian journal of Tropical Medicine (Elsevier), 7(Suppl 1): S610-S616. (Impact factor = 1.2). 15. Zahara K, S, Tabassum, S. Sabir, M. Arshad, R. Qureshi, M. S. Amjad and S. K Chaudhari. 2014. A review of therapeutic potential of <i>Saussurea lappa</i>-An endangered plant from Himalaya. Asian journal of Tropical Medicine (Elsevier). 7(Suppl 1): S60-S69. (Impact factor = 1.2). 16. Ilyas M., N. Ilyas, M. Arshad, A. G. Kazi, A. M. Kazi, and A. Waheed. 2014. Qtl mapping of wheat doubled haploids for chlorophyll content and chlorophyll fluorescence kinetics under drought stress imposed at anthesis stage Pak. J. Bot., 46(5): 1889-1897 (Impact factor = 1.207). 17. Fatima, S., A. Akram, M. Arshad, S. K. Chaudhari, , M. S. Amjad and H. Qureshi.. 2014 Effect of biological potassium fertilization (BPF) on the availability of phosphorus and potassium to maize (<i>Zea mays</i> L.) under controlled conditions. International Journal of Biosciences, 5(8):25-36 (Impact factor = 0.076). 18. Akhtar, S. A. Shahzad, N. Bangash, M. Arshad F - Hassan and I. Ahmed 2014. Morpho-physiological and genetic diversity of groundnut (<i>Arachis hypogaea</i> L.) Genotypes under iron deficiency stress Pak. J. Agri. Sci., Vol. 51(4), 953-961 (Impact factor = 1.24). 19. Anser, M. R. , M. A. Malik, M. Ansar, M. Arshad.
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	2014. Integrated practices for Canada thistle suppression in rainfed wheat under contrasting climactic conditions. SYLWAN. 158(10):123-139 (Impact factor = 0.251). 20. Iqbal, Z., R. Naeem, M. Ashraf, M. Arshad, A. Afzal, A. H. Shah, M. S. Khan and M. Farooq. 2015. Genetic Diversity of Soybean Accessions Using Seed Storage Proteins. Pak. J. Bot., 47(1): 203-209. (Impact factor = 1.207). 21. Kanwal, R., M. Arshad, Y. Bibi, S. Asif. S. K. Chaudhari. 2015. Evaluation of Ethnopharmacological and Antioxidant Potential of <i>Zanthoxylum armatum</i> DC. J. Chem., 2015:1-8. (Impact factor = 0.772). 22. Ali, A., M. Arshad, S. M. S. Naqvi, A. Rasheed, H. Sher, A. G. Kazi and A. Mujeeb-Kazi. 2015. Comparative Assessment of Synthetic-derived and Conventional Bread Wheat Advanced Lines Under Osmotic Stress and Implications for Molecular Analysis. Plant Mol Biol Rep. Springer. DOI 10.1007/s11105-015-0884-8 (Impact factor = 2.374). 23. Manzoor K., N. Ilyas, N. Batool, B.Ahmad and M. Arshad (2015). Effect of Salicylic Acid on the Growth and Physiological Characteristics of Maize under Stress Conditions J.Chem.Soc.Pak., 37(3):588-593(Impact factor: 0.345). 24. Massod, M., M. Arshad, R. Qureshi. S. Sabir, M. S. Amjad, H. Qureshi and Z. Tahir 2015. <i>Picrorhiza kurroa</i>: An ethnopharmacologically important plant species of Himalayan region Pure and Applied Biology,4 (3):407-417 (Impact factor = 0.365).
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DR. RAHMATULLAH QURESHI

RESEARCH THESES SUPERVISED	A. <u>Ph.D. Theses Supervised (Major supervisor)</u>			
	S. No.	Name	Year	Title of theses
	1	Ms. Mubashrah Munir HEC Indigenous Scholar	2014	Ecology of Algal Flora from Kallar Kahar Lake and its tributaries

2	Mr. Gul Rahim HEC Indigenous Scholar	2014	Bioactivity Guided Assessment of some medicinal plants of Malakand Division
3	Ms. Mehmooda Munazir, HEC Indigenous Scholar	2015	Assessment of antimicrobial, antioxidant activities and phytochemical screening of <i>Leptadenia pyrotechnica</i>
4	Ms. Humaira Shaheen, HEC Indigenous Scholar	2015	Floristic & Ethnobotanical Enumerations of Thal Desert, Punjab, Pakistan
5	Mr. Muhammad Ilyas	2015	Phytosociological and Ethnobotanical appraisal of Kabal Valley Swat with Especial Reference to Plant Biodiversity Conservation.

B. PhD Theses Supervised (Member)

S. No.	Name	Year	Title of theses
6	Pervaiz Anwar	2014	Biochemical analysis of oil extracted from wild olive (<i>Olea ferruginea</i>) and its comparison with standard oil of cultivated olive (<i>Olea europea</i>)
7	Khalid Mehmood (03- arid-827)	2014	Improvement of wheat for drought tolerance through Genetic Engineering
8	Ms. Sammar Fatima (02-arid- 281)	2014	Drought stress induced metabolic changes in local cultivar of wheat (<i>Triticum aestivum</i> L.)
9	Rehana Kauser	2015	Morphological and biochemical adaptations of local cultivar of barley (<i>Hordeum vulgare</i> L.) under drought
10	Mr. Safdar Ali (11-arid-06)	2015	Weed population dynamics and wheat productivity under different tillage systems in Pothwar

	<table><tr><td>11</td><td>Ms. Sangam Khalil (05-arid-334)</td><td>2015</td><td>Habitat preference and breeding biology of grey partridge (<i>Francolinus pondicerianus</i>) in salt range, Punjab</td></tr><tr><td>12</td><td>Ms. Asma Ahmed</td><td>2015</td><td>Phytochemical analysis of selected medicinal plants for antidiabetic compounds</td></tr></table>	11	Ms. Sangam Khalil (05-arid-334)	2015	Habitat preference and breeding biology of grey partridge (<i>Francolinus pondicerianus</i>) in salt range, Punjab	12	Ms. Asma Ahmed	2015	Phytochemical analysis of selected medicinal plants for antidiabetic compounds																												
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12	Ms. Asma Ahmed	2015	Phytochemical analysis of selected medicinal plants for antidiabetic compounds																																		
	C. . Phil. Theses Supervised (Major Supervisor) <table><tr><th>S. No.</th><th>Name</th><th>Year of Passing</th><th>Title of theses</th></tr><tr><td>32</td><td>Abdullah Rahim</td><td>2014</td><td>Ethnobotanical profile of District Battagram, KPK</td></tr><tr><td>33</td><td>Saima Sharif</td><td>2014</td><td>Ethnobotanical Enumeration of Tehsil Bagh, AJK</td></tr><tr><td>34</td><td>Anam Iftikhar</td><td>2015</td><td>Micro-propagation and antioxidant activity of <i>Solanum villosum</i></td></tr><tr><td>35</td><td>Sajid Safeer</td><td>2015</td><td>Floristic bioecology of Mahasheer National Park, AJK</td></tr><tr><td>36</td><td>Muhammad Imran</td><td>2015</td><td>Botanical wisdom of Tehsil Balakot, KPK</td></tr><tr><td>37</td><td>Farhan Anwar</td><td>2015</td><td>Vegetation analysis of Rangelands of District Bakhar (Punjab), Pakistan</td></tr></table> D. Co-supervisor <table><tr><th>S. No.</th><th>Name</th><th>Year of Passing</th><th>Title of theses</th></tr><tr><td>39</td><td>Sabith Rehman</td><td>2015</td><td>Ethnobotanical evaluation of North Waziristan Agency</td></tr></table>	S. No.	Name	Year of Passing	Title of theses	32	Abdullah Rahim	2014	Ethnobotanical profile of District Battagram, KPK	33	Saima Sharif	2014	Ethnobotanical Enumeration of Tehsil Bagh, AJK	34	Anam Iftikhar	2015	Micro-propagation and antioxidant activity of <i>Solanum villosum</i>	35	Sajid Safeer	2015	Floristic bioecology of Mahasheer National Park, AJK	36	Muhammad Imran	2015	Botanical wisdom of Tehsil Balakot, KPK	37	Farhan Anwar	2015	Vegetation analysis of Rangelands of District Bakhar (Punjab), Pakistan	S. No.	Name	Year of Passing	Title of theses	39	Sabith Rehman	2015	Ethnobotanical evaluation of North Waziristan Agency
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Lead Guest Editor	Evidence Based-Complimentary and Alternative Medicine, Hindawi publishers (USA).																																				
Co-Editor	Pakistan Journal of Weed Science Research (HEC Recognized)																																				
TECHNICAL REFEREE	1. Pakistan Journal for Scientific & Industrial Research 2. Pakistan Journal of Agriculture 3. Pakistan Journal of Pharmaceutical Sciences 4. Journal of Animal and Plants Sciences 5. Pakistan Journal of Pharmaceutical Sciences 6. Journal of Ethnobiology & Ethnomedicine 7. BMC Complementary and Alternatives Medicine 8. Journal of Medicinal Plants Research 9. African Journal of Pharmacy & Pharmacology 10. Mountain Research & Development 11. Journal of Ethnopharmacology 12. Pharmaceutical Biology 13. African Journal of Traditional, Complementary and Alternative																																				

	medicines 14. International Journal of Economic and Environmental Geology
Consultancies	1. Environmental Impact Assessment for Seismic operation in East Qadan Wari gas field (Nara Desert) with reference to the vegetation. 2001. Hagler Bailey Pakistan (Pvt.) Limited, Islamabad. 2. Environmental Impact Assessment for Seismic operation in Gamabt Block with reference to the vegetation. 2001. Halcrow Pakistan (Pvt.) Limited, Islamabad. 3. Environment Impact Assessment Study of Sawan Wari (Nara Desert) for OMV Gas Company with reference to the vegetation. 2001. Hagler Bailey Pakistan (Pvt.) Limited, Islamabad.
Resource Person/Guest Speaker	1. Delivered an invited lecture titled, "Significance of Plant Biodiversity:Prospects from Pakistan" Organized by the department of Botany, Gorden college, Rawalpindi, dated 8th January, 2016. 2. Delivered an invited lecture titled, "Role of Plants for the Sustainable Biodiversity" on the International Day for Biological Diversity "Biodiversity for Sustainable Development" Organized by Pakistan Museum of Natural History, Islamabad in collaboration with Pakistan Science Foundation and Ministry of Science &Technology dated 22nd May, 2015. 3. Delivered an invited talk on "Plants as renewable source of energy: prospects from Pakistan" in three days International Conference on Energy Production From Agriculture Biomass and Domestic Waste organized by the Department of Biochemistry, PMAS-AAUR dated 15-17th April, 2014. 4. Delivered an invited talk on "Significance of Plant Biodiversity-Prospects from Pakistan" in Gorden College, Rawalpindi organized by the department of Botany, dated 8th January, 2016. 5. Delivered an invited talk on "Medicinal shrubs and trees of Nara Desert, Pakistan" in the 5th International and 14th National conference of Botany, organized by Pakistan Botanical Society, University of Karachi, , dated 27 to 15 to 18th January, 2016. 6. Delivered an invited talk on "Phytodiversity and conservation issues: A case study from the Nara Desert, Pakistan" in the 2nd International Symposium On Biodiversity of Pakistan: Prospects and Associated Issues organized by Department of Botany University of Peshawar at Baragali Summer Campus Abbotabad dated May 22-24, 2016
SEMINAR/CONFERENCE/SYMPOSIUM/ATTENDEE	1. 4th International and 13th National conference of Botany, organized by Pakistan Botanical Society, Shaheed Benazir Butto University, Sheringal, Upper Dir, Pakistan, dated 27 to 30.08.2014. 2. International Seminar on "Research in Pharmacy: Opportuniyties for Phramacists to Contribute in Healthcare System, Faculty of Pharmacy,

D	University of Baluchistan, Quetta, 1st June, 2015, Serena Hotel, Quetta. 3. 4th International and 13th National conference of Botany, organized by Pakistan Botanical Society, Shaheed Benazir Butto University, Sheringal, dated 27 to 30.08.2014. 4. Strategic management of biodiversity in the Jhelum-Poonch River Basin: Challenges for Hydropower Development organized by ICF, Haigler Baily at Serena Hotel, Islamabad dated 12-13th June, 2015. 5. 5th International and 14th National conference of Botany, organized by Pakistan Botanical Society, University of Karachi, , dated 27 to 15 to 18th January, 2016. 6. 2nd International Symposium On Biodiversity of Pakistan: Prospects and Associated Issues organized by Department of Botany University of Peshawar at Baragali Summer Campus Abbotabad dated May 22-24, 2016
PUBLICATIONS	<u>INTERNATIONAL</u> <u>(Impact Factored)</u> 1. Ali, S., M.A. Malik, M. Ansar, G. Qadir and R. Qureshi. 2016. Seed bank density and weed flora dynamics of <i>Convolvulus arvensis</i> as affected by different tillage systems in rainfed wheat (<i>Triticum aestivum</i>). <i>Int. J. Agric. & Biol.</i>, Vol. 00, No. 0, 201x (Impact Factor: 0.758) 2. Idrees, S., R. Qureshi, Y. Bibi, A. Ishfaq, N. Khalid, A. Iftikhar, A. Shabir, I. Riaz, Saboon and N. Ahmad. 2016. Ethnobotanical and biological activities of <i>Leptadenia pyrotechnica</i> (Forssk.) Decne.: A review. <i>Afr. J. Tradit. Complement. Altern. Med.</i>, 13(4): 88-96. (Impact Factor: 0.553) 3. Qureshi, R., S. A. Ghazanfar, H. Obied, V. Vasileva and M. A. Tariq. 2016. Ethnobotany: A Living Science for Alleviating Human Suffering. <i>Evidence-Based Complementary and Alternative Medicine</i>, Volume 2016, Article ID 9641692, 3 pages. http://dx.doi.org/10.1155/2016/9641692. (Impact Factor: 1.9122) 4. Ahmad, I., M. J. Jaskani, M. Nafees, I. Ashraf and R. Qureshi. 2016. Control of media browning in micropropagation of Guava (<i>Psidium guajava</i> L.). <i>Pak. J. Bot.</i>, 48(2): 713-716. 5. Ali, S., M.A. Malik, M. Ansar and R. Qureshi. 2016. Economic evaluation for integrated use of glyphosate herbicide and tillage combinations applied before sowing of rain-fed wheat (<i>Triticum aestivum</i> L.). <i>Pak. J. Bot.</i>, 48(1): 331-337 (Impact Factor: 0.822). 6. Munir, M., R. Qureshi, M. Ilyas, M. Munazir and M.K. Leghari. 2016. Systematics of <i>Chroococcus</i> from Pakistan. <i>Pak. J. Bot.</i>, 48(1): 255-262 (Impact Factor: 0.822). 7. Ilyas, M., R. Qureshi, N. Akhtar, M. Munir and Z.U Haq. 2015. Vegetation studies of Kabal Valley, District Swat, Pakistan using multivariate approach. <i>Pak. J. Bot.</i>, 47(SI): 77-86 (Impact Factor: 0.822).

8. Khan, A.M., **R. Qureshi**, M.F. Qaseem, M. Munir, M. Ilyas and Z. Saqib. 2015. Floristic checklist of district Kotli, Azad Jammu & Kashmir. *Pak. J. Bot.*, 47(5): 1957-1968. (**Impact Factor: 0.822**).
9. Iftikhar, A., **R. Qureshi**, M. Munir, G. Shabbir, M. Hussain and M.A. Khan. 2015. *In vitro* micropropagation of *Solanum villosum*-a potential alternative food plant. *Pak. J. Bot.*, 47(4): 1495-1500 (**Impact Factor: 0.822**).
10. Mushtaq, S., A. Akram, N.Q. Hanif, **R. Qureshi**, Z. Akram, S. Akhund and B.G. Nayyar. 2015. Natural incidence of aflatoxins, mycological profile and molecular characterization of aflatoxigenic strains in chickpea flour. *Pak. J. Bot.*, 47(3): 1153-1160 (**Impact Factor: 0.822**).
11. Munazir, M., **R. Qureshi** and M. Munir. 2015. Preliminary phytochemical screening of roots and aerial parts of *Leptadenia pyrotechnica*. *Pak. J. Bot.*, 47(2): 659-664 (**Impact Factor: 0.822**).
12. Maqsood, M., R. Qureshi, M. Ikram, S. Ali, M. Rafi, J. A. Khan and M. S. Ahmed. 2015. Preliminary screening of methanolic plant extracts against human rhabdomyosarcoma cell line from Salt range, Pakistan. *Pak. J. Bot.*, 47(1): 353-357 (**Impact Factor: 0.822**).
13. Munazir, M., R. Qureshi and M. Munir. 2015. *In vitro* antioxidant activity of methanolic extracts of various parts of *Leptadenia pyrotechnica* (Forssk.) Decne. *Pak. J. Pharm. Sci.*, 28(2): 535-539 (**Impact Factor: 0.95**).
14. Shaheen, H., **R. Qureshi**, I. Zahra M. Munir and M. Ilyas. 2014. Floristic diversity of Santh Saroola, Kotli Sattian, Rawalpindi, Pakistan. *Pak. J. Bot.*, 46(6): 1945-1954 (**Impact Factor: 0.822**).
15. **Qureshi, R.** and S. Raana. 2014. *Conyza sumatrensis* (Retz.) E. H. Walker: A new record from Pakistan. *Plant Biosystems*, 148(5-6): 1035-1039. <http://dx.doi.org/10.1080/11263504.2013.850119> (**Impact Factor: 1.910**)
16. Maqsood, A., A. Rehman, I. Ahmad, M. Nafees, I. Ashraf, **R. Qureshi**, M. Jamil, M. Rafay and T. Hussain. 2014. Physiological attributes of fungi associated with stem end rot of mango (*Mangifera indica* L.) cultivars in postharvest fruit losses. *Pak. J. Bot.*, 46(5): 1915-1920 (**Impact Factor: 0.822**).
17. Zahara, K., S. Tabassum, S. Sabir, M. Arshad, **R. Qureshi**, M.S. Amjad and S.K. Chaudhari. 2014. A review of therapeutic potential of *Saussurea lappa*-An endangered plant from Himalaya. *Asian Pac. J. Trop. Med.*, 7(Suppl 1): 560-569 (**Impact Factor: 0.926**).
18. Wariss, H.M., S. A. Pirzada, K. Alam, S. Anjum and **R. Qureshi**. 2014. Flora of Lal Suhanra National Park, Bahawalpur, Punjab, Pakistan. *Pak. J. Bot.*, 46(4): 1331-1341 (**Impact Factor: 0.822**).
19. **Qureshi, R.**, H. Shaheen, M. Ilyas, M. Wasim and M. Munir. 2014. Phytodiversity and plant life of Khanpur Dam, Khyber Pakhtunkhwa, Pakistan. *Pak. J. Bot.*, 46(3): 841-849 (**Impact Factor: 0.822**).
20. Gulfraz, M., D. Ahamd, M.S. Ahmad, **R. Qureshi**, R.T. Mahmood, N. Jabeen and K.S. Abbasi. 2014. Effect of leaf extracts of *Taraxacum*

- officinale* on CCl₄ induced Hepatotoxicity in rats, *in vivo* study. Pak. J. Pharm. Sci., 27(4): 825-829 ((**Impact Factor: 0.95**)).
21. Shaheen, H., **R. Qureshi**, A. Akram and M. Gulfraz. 2014. Inventory of medicinal flora from Thal Desert, Punjab, Pakistan. *Afr. J. Tradit. Complement. Altern. Med.*, 11(3): 282-290 (**Impact Factor: 0.553**).
 22. Shaheen, H., **R. Qureshi**, A. Akram, M. Gulfraz and D. Potter. 2014. A preliminary floristic checklist of Thal Desert Punjab, Pakistan. *Pak. J. Bot.*, 46(1): 13-18 (**Impact Factor: 0.822**).

(Non-Impact Factored Papers)

23. Abbas, Q., S. W. Khan, S. Khatoon, S. A. Hussain, S. N. Hassan, A. Hussain, **R. Qureshi** and I. Hussain. 2014. Floristic biodiversity and traditional uses of medicinal plants of Haramosh Valley Central Karakoram National Park of Gilgit district, Gilgit-Baltistan, Pakistan. *J. Bio. & Env. Sci.*, 5 (6): 75-86.
24. Ahmed, A., M.J. Asad, M.S. Ahmad, **R. Qureshi**, S.I. Shah, H. Gul and M. Gulfraz. 2015. Antidiabetic and hypolipidemic potential of *Rhazya stricta* Decne extract and its fractions. *International Current Pharmaceutical Journal*, 4(2): 353-361.
25. Ali, S., M.A. Malik, M. Ansar and **R. Qureshi**. 2014. Weed growth dynamics associated with rainfed wheat (*Triticum aestivum* L.) establishment under different tillage systems in Pothwar. *International Journal of Plant, Animal and Environmental Sciences*, 4(2): 146-154.
26. Amjad, M.S., M. Arshad and **R. Qureshi**. 2015. Ethnobotanical inventory and folk uses of indigenous plants from Pir Nasoora National Park, Azad Jammu and Kashmir. *Asian Pac. J. Trop. Biomed.*, 5(3): 234-241 (**Impact Factor: 0.926**).
27. Fatima, S. M. Arshad and **R. Qureshi**. 2014. QTL mapping for physiological maturity in synthetic hexaploid wheat (*Triticum aestivum* L.) under drought stress. *Pure Appl. Bio.*, 3(1): 25-31.
28. Khan, A., A. Ahmad, Z. Rahman, Siraj-ud-Din, **R. Qureshi** and J. Muhammad. 2015. The assessment of carbon stocks in the oak scrub forest of Sheringal Valley Dir Kohistan. *Open Journal of Forestry*, 5: 510-517.
29. Masood, M., M. Arshad, R. Qureshi, S. Sabir, M.S. Amjad, H. Qureshi and Z. Tahir. 2015. *Picrorhiza kurroa*: An ethnopharmacologically important plant species of Himalayan region. *Pure Appl. Biol.*, 4(3): 407-417.
30. **Qureshi, R.** 2014. Folk knowledge of medicinal plants from Rohri Hills, Sindh, Pakistan. *Acta Hort. (ISHS)* 1023: 255-261. http://www.actahort.org/books/1023/1023_37.htm
31. **Qureshi, R.**, M. Khanum, H. Shaheen and M. Munir. 2014. Medicinal plants of Koont research farm, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, Pakistan. *Indian J. Nat. Prod. Resour.*, 5(3): 273-277.

32. **Qureshi, R.**, Qurat-Ul-Ain, M. Ilyas, G. Rahim, W. Ahmad, H. Shaheen and K. Ullah. 2012. Ethnobotanical study of Bhera, District Sargodha, Pakistan. *Archives Des Sciences*, 65 (11): 690-707. (**Impact factor: 0.474**)
33. Sabir, S., **R Qureshi**, M. Arshad, M.S. Amjad, S. Fatima, M. Masood, Saboon, S. K. Chaudhari. 2015. Pharmacognostic and clinical aspects of *Cydonia oblonga*: A review. *Asian Pac. J. Trop. Dis.*, 5(11): 850-855.
34. Shaheen, H., **R. Qureshi**, M.F. Qaseem. 2015. Qualitative investigation techniques used for analysis of ethnobotanical data from Thal Desert, Punjab, Pakistan. *Journal of Medicinal Plants Studies*, 3(6): 69-75.
35. Shaheen, H., R. Qureshi, S. Iqbal and M. F. Qaseem. 2014. Seasonal availability and palatability of native flora of Santh Saroola Kotli Sattian, Rawalpindi, Pakistan. *African Journal of Plant Sciences*, 8(2): 92-102. DOI:10.5897/AJPS12.169.

BOOK CHAPTER/RESAERCH SUMMARY PUBLISHED

36. **Qureshi** and G.R. Bhatti. 2014. Floral diversity of Nara Desert, Pakistan. , 413-431. In: Biodiversity of Pakistan (Editor: Rafique, M., K.A. Ibupoto, S.A. Hussain & K. Mahmood). pp. 413-431. (**ISBN: 978-969-8040-28-4**).
37. **Qureshi, R.** 2014. Floral Diversity, Threats and Conservation Measures: A Case Study from Nara Desert, Pakistan. In: Environmental and Agricultural Research Summaries (Editor: Lucille T. Cacioppo). Volume 3. pp.175-176. **ISBN: 978-1-63117-090-4**. eBook: **ISBN: 978-1-63117-094-2**.

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Personal	ASSISTANT PROFESSOR DEPARTMENT OF BOTANY PMAS ARID AGRICULTURE UNIVERSITY, MURREE ROAD, RAWALPINDI PAKISTAN. E. Mail: noshinilyas@yahoo.com , noshinilyas@uaar.edu.pk Contact no. 092-333-5310587 (Cell) 092-51-5418017 (landline)
Courses taught	• Plant Proteomics • Stress Physiology • Physiology and Genetics of BNF

	• Plant Physiology • Environmental Pollution • Plant Anatomy • Physiology and Genetics of Biological Nitrogen Fixation
M. Phil thesis supervised	1. Role of biochar as soil amendment for wheat under salinity stress 2. Phytochemical study and medical applications of some medicinal plants as antioxidant and anti-tumor agents 3. Effect of Salicylic acid and Jasmonic acid on Wheat under drought stress 4. Effect of Salicylic Acid and Glycine-Betaine on Wheat under Salt Stress 5. Effect of Plant Derived Smoke on Physiology of Brassica under Heavy Metal Stress 6. Effect of Brassinosteroid on Wheat under Drought Stress 7. Interaction of Jasmonate with Ethylene in the Regulation of some Physiological processes in <i>Triticum aestivum</i> . L 8. Effect of PGPR on biochemical and physiological parameters of basil 9. Potential of agricultural waste for the improvement of wheat 10. Role of biodegradable mulch in the improvement of cabbage 11. Effects of Thermal Decontamination of Crude Oil Polluted Soil on the Growth of Lettuce 12. Plant growth promoting rhizobacteria and phosphorous fertilizer assisted phytoextraction of heavy metals in wheat 13. Effect of Organic Amendments on Tomato Growth and Yield 14. Role of bacterial exopolysaccharides in drought tolerance of wheat
Ph. D thesis supervised	1. Screening and evaluation of allelochemicals in suppressing weeds of wheat crop (Tauseef Anwar Ph.D.completed in 2018).

	2. Fertigation efficacy of municipal waste water for leafy vegetables (Hina waheed Ph.D.completed in 2018). 3. Amelioration of heavy metal stress by inoculation with tolerant PGPRs and Biochar (Roomina Mazhar Thesis submitted) 4. Bioremediation of Crude Oil contaminated Soil with PGPR and Biochar for Sustainable Production of Maize (Maimona Saeed in progress) 5. Effect of bioorganic fertilizer containing PGPR prepared from waste protein on maize (Fatima Bibi in progress). 6. Testing the potential of waste water from olive oil mill waste for improvement of growth of wheat crop (Sumera Shabir in progress). 7. Amelioration of drought stress by silicon and biofertilizer (Nosheen Akhtar in progress).
Ph. D thesis co-supervised	1. Degradation of Azo Containing Dyes in environment(Farzana Kausar Ph.D.completed in 2016) 2. Association mapping for drought tolerance in diverse bread wheat germplasm (Sunbal Khalil Ch Ph.D.completed in 2017) 3. Morpho-Physiological responses of wheat towards iron and silver nano particles application(Farhat Ph.D.completed in 2017) 4. Utilizing Potential Oleginous microbes for lipid bases biofuel production from food processing waste(Samia Qadeer Ph.D.completed in 2019) 5. Evaluation of Anti-Microbial and Anti-Oxidant Potential of Green Silver and Copper Nanoparticles in Wheat (Sidra Sabir Thesis submitted in 2019) 6. Response of Canola to Green Synthesized Zinc Nanoparticle (Sohail Thesis submitted in 2019) 7. Potential of Bacteria for Simultaneous Treatment for Polychlorinated Biphenyl (PCB) and Chromium in tannery waste water (Muhammad Wahab Yasir Thesis submitted in 2019)

Publications (Non-impact factor)	17. Iqbal, M., Asif, S., Ilyas, N. , Raja, N. I., Hussain, M., Shabir, S., ... & Rauf, A. (2016). Effect of plant derived smoke on germination and post germination expression of wheat (<i>Triticum aestivum</i> L.). <i>American Journal of Plant Sciences</i> , 7(06), 806.
Research Interest	• Plant microbe interaction under abiotic stress. • Physiological, biochemical and molecular mechanism of abiotic stress tolerance in plants.
Impact factor Publications	Impact Factor Publication 25. Amara, U., Shad, S., Ilyas, N., Manaf, A., & Raja, N. I. (2018). In vitro germination and biochemical profiling of Brassica napus in response to biosynthesised zinc nanoparticles. <i>IET nanobiotechnology</i>, 13(1),46-51 (Impact factor = 2.059). 26. Yasmeen, F., Raja, N. I., Ilyas, N., & Komatsu, S. (2018). Quantitative proteomic analysis of shoot in stress tolerant wheat varieties on copper nanoparticle exposure. <i>Plant molecular biology reporter</i>, 36(2), 326-340.(Impact factor =3.543) 27. Qadeer, S., Mahmood, S., Anjum, M., Ilyas, N., Ali, Z., & Khalid, A. (2018). Synchronization of lipid-based biofuel production with waste treatment using oleaginous bacteria: A biorefinery concept. <i>Process Safety and Environmental Protection</i>, 115, 99-107. (Impact factor = 3.441). 28. Anwar, T., Ilyas, N., Qureshi, R., Munazir, M., Khan, A. M., Ansari, L., ... & Panni, M. K. (2018). Allelopathic activity of solvent extracts of <i>Rhazya stricta</i> Decne. against selected weeds of wheat crop. <i>Appl. Ecol. Environ. Res</i>, 16(5), 5405-5421. (Impact factor = 0.7). 29. Batool, N., Ilyas, N., Shahzad, A., Hauser, B. A., & Arshad, M. (2018). Quantitative trait loci (QTLs) mapping for salt stress tolerance in wheat at germination stage. <i>Pakistan Journal of Agricultural Sciences</i>, 55(1). (Impact factor = 0.494). 30. Batool N and N. Ilyas., 2018. Physicochemical and Antimicrobial properties of canola (<i>Brassica napus</i> L.) seed oil <i>Pakistan Journal of Pharmaceutical Sciences (PJPS)</i> 55(1), 47-55 (Impact factor = 0.682). 31. Batool N, M.Arshad, F.Hassan, N.Ilyas, A. Shahzad. 2018. Review-A review of therapeutic potential of <i>Mangi feraindica</i>. <i>Pakistan Journal of Pharmaceutical</i>

	Sciences (PJPS) 31 (4) : 1441-1448 (Impact factor = 0.682). 32. Ilyas, N., Ambreen, F., Batool, N., Arshad, M., Mazhar, R., Bibi, F., & Saeed, M. (2018). Contribution of Nitrogen Fixed by Mung Bean to the Following Wheat Crop. <i>Communications in soil science and plant analysis</i>, 49(2), 148-158. (Impact factor = 0.589). 33. Ilyas, N., Gull, R., Mazhar, R., Saeed, M., Kanwal, S., Shabir, S., & Bibi, F. (2017). Influence of salicylic acid and jasmonic acid on wheat under drought stress. <i>Communications in soil science and plant analysis</i>, 48(22), 2715-2723. (Impact factor = 0.589). 34. Kanwal, S., Ilyas, N., Shabir, S., Saeed, M., Gul, R., Zahoor, M., ... & Mazhar, R. (2018). Application of biochar in mitigation of negative effects of salinity stress in wheat (<i>Triticum aestivum</i> L.). <i>Journal of plant nutrition</i>, 41(4), 526-538. (Impact factor = 0.618). 35. Qaseem, M. F., Qureshi, R., Ilyas, N., & Jalal-Ud-Din, S. G. (2017). Multivariate statistical analysis for yield and yield components in bread wheat planted under rainfed conditions. <i>Pakistan Journal of Botany</i>, 49(6) (Impact factor = 0.690). 36. Kanwal, S., N. Ilyas, N. Batool, and M. Arshad. 2014. Alleviation of drought stress in wheat by combined application of PGPR, Compost and mineral fertilizer. <i>Journal of Plant Nutrition</i>.40(9): 1250-1260. (Impact factor = 0.168). 37. Saeed, M., Ilyas, N., Mazhar, R., Bibi, F., & Batool, N. (2016). Drought mitigation potential of Azospirillum inoculation in canola (<i>Brassica napus</i>). <i>Journal of Applied Botany and Food Quality</i>, 89. (Impact factor = 1.06). 38. Mazhar, R., Ilyas, N., Saeed, M., Bibi, F., & Batool, N. (2016). Biocontrol and Salinity Tolerance Potential of Azospirillum lipoferum and its Inoculation Effect in Wheat Crop. <i>International Journal of Agriculture & Biology</i>, 18(3). (Impact factor = 0.746). 39. Kausar, F., Khalid, A., Mahmood, T., & Ilyas, N. (2016). Efficacy of Bacterial Strains Isolated from Textile Wastewater for Degradation of Azo Dye Associated Aromatic Amines. <i>International Journal of Agriculture & Biology</i>, 18(6). (Impact factor =0.746).
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Personal	PMAS ARID AGRICULTURE UNIVERSITY, MURREE ROAD, RAWALPINDI PAKISTAN. E. Mail: drnaveedraja@gmail.com drnaveedraja@uaar.edu.pk H. No. 287/32-A, Madina Town, Near Maryam Marriage Hall, Shamsabad, MURREE ROAD, RAWALPINDI PAKISTAN. Off: 051-2372283
Courses taught	• Plant Physiology • Plant Cell Biology • Plant Genomics • Conservation and Management of Resources
M. Phil thesis supervised	8. Screening of Pakistani Wheat (<i>Triticum aestivum</i> L.) Varieties for Thermo-Tolerance Against Heat Shocks. 9. <i>In Vitro</i> And Molecular Characterization of Transgenic Wheat (<i>Triticum aestivum</i> L.) Resistant for Bacterial Diseases. 10. Comparative Study of Bacterial Diseases Susceptibility in Local Transgenic and Non-Transgenic Wheat Varieties. 11. Effect of UV, Gamma and X-Rays Radiations on Morphological and Physiological Characters of Different Varieties of <i>Zea mays</i>. 12. Micro- Propagation of Myrtle (<i>Myrtus communis</i> L.) 13. Morphological and Physiological Effects of UV, Gamma and X-Rays on Different Varieties of Wheat (<i>Triticum aestivum</i> L.). 14. Detection and Characterization of Anti-Microbial Activity of <i>Aloe vera</i> Gel. 15. Establishment of an Efficient Protocol for Callus Induction and Regeneration of <i>Cassia angustifoli</i>. 16. Effect of Light Regime and Growth Promoters on <i>In Vitro</i> Seed Germination of Sea Buckthorn. 17. <i>In Vitro</i> Propagation of <i>Citrus Reticulata</i>. 18. Ethnobotanical Wisdom of The Inhabitant of Devi Galli, Azad Kashmir. 19. Biological and Analytical Characterization of Black-Pepper Seed Oil. 20. Composition and Physiological Effects of <i>Silybum marianum</i> Seed Oil. 21. Antibacterial and Antifungal Effects of Aloe, Turmeric

	and Lemon and Their Potential Role in Callus Induction and Regeneration. 22. In Vitro Conservation and Production of Desiccation Tolerant Synthetic Seeds of Mandarin. 23. Effect of Different Wavelengths of Light on Cell Proliferation and Differentiation of Bread Wheat Calli. 24. Effect of Green Silver Nano-Particles on Germination and Growth of Wheat Against Heat Stress. 25. Effect of Green Silver Nano-Particles on <i>Citrus reticulata</i> L. Under Biotic Stress. 26. Evaluation of Antifungal and Antibacterial Activities of Green Silver Nano-Particles Synthesized from <i>Citrus reticulata</i> L. 27. Effect of Green Silver Nano-Particles on Morphogenic and Biochemical Variations in Callus Cultures of <i>Citrus Reticulata</i> L. Under Different Spectral Lights. 28. Effect of Plant Based Silver Nano-Particles on Germination and Post Germination Expression of Rice Against <i>Aspergillus flavus</i>. 29. Effect of Iron Nano-Particles on Wheat Under Drought Stress. 30. Effect of Green Synthesized Silver and Copper Nano-Particles on Growth Parameters of Maize. 31. Antenatal Screening of Local Females for Haematological Problems. 32. Effect of Calcium Phosphate and Selenium Nanoparticles on Wheat Against Drought Stress. 33. Effect of Green Synthesized Silver Nanoparticles in Stress on Wheat Calli. 34. Effect of Titanium Dioxide Nanoparticles on Wheat Under Salinity Stress.
Ph. D thesis supervised	• Morpho-Physiological and Biochemical Response of Wheat (<i>Triticum aestivum</i> L.) to Cu and Fe Nanoparticles (Farhat Yasmeen Ph.D. completed in 2017). • Detection and Sequence Determination of Begomoviruses associated with Leaf Curl Disease at <i>Capsicum</i> spp. (Samina Yasmin Ph.D. completed in 2018) • Strategies for The Production of Chemically Consistent Plantlets of <i>Citrus reticulata</i> L.. (Mubashir Hussain Ph.D. completed in 2019).

	• Synthesis and Characterization of TiO₂ NPs and their Evaluation for Anti-Fungal Effects on Wheat. (Seema Hussan Satti Thesis submitted) • Control of Aflatoxin in Rice, by Application Silver Nano-Particles. (Muhammad Ejaz Thesis submitted) • Physio-Morphic And Biochemical Characterization of Wheat Varieties in Response to Silver Nanoparticles Against Heat Stress. (Muhammad Iqbal in progress). • Differential role of green synthesized titanium dioxide nanoparticles on wheat in response to salinity. (Nilofar Mustafa Abbasi in progress). • Response of Bread Wheat to green bimetallic Ag/ZnO alloy nanoparticles and fertilizers (Maria Ehsan in progress).
Ph. D thesis co-supervised	1. Hina Waheed (2018)
Publications (Non impact factor)	1. Iqbal M, Y. Bibi, N.I. Raja, M. Ejaz, M. Hussain, F. Yasmeen, H. Saira, M. Imran. 2017. Review on Therapeutic and Pharmaceutically Important Medicinal Plant <i>Asparagus officinalis</i> L. <i>Journal of Plant Biochemistry and Physiology</i>, 5(1): 180-186. 2. Iqbal M., N. I. Raja, F. Yasmeen, M. Hussain, M. Ejaz and M. A. Shah. 2017. Impacts of Heat Stress on Wheat: A Critical Review. <i>Advances in Crop Science and Technology</i>, 5(1):1-9. 3. Shabir, A., N. I. Raja, U. Javaid, N. U. A. Zafar, H. Javed, F. Yasmeen. 2017. Ethno botanical Wisdom of Inhabitant of Devi Galli Azad Kashmir. <i>Biomedical Journal of Science & Technical Research</i>, 1(6):1-11. 4. Mazhar R; N. Ilyas; N. I. Raja; M. Saeed; M. Hussain; W. Seerat; H. Qureshi; Sumera Shabir. 2016. Plant growth promoting Rhizobacteria: Biocontrol potential for pathogens. <i>Pure and Applied Biology</i>, 5(4):1288-1295. 5. Iqbal H; M. Shoaib; M. Usman; S. Aziz; M. A. Yousaf; M. J. Asad;N. I. Raja; M. M. Zafar; S. Nazir. 2016. <u>In vitro Study: Suppression of LDL Oxidation Using Green Leafy Vegetable Leaves.</u> <i>American-Eurasian Journal of Agriculture and Environmental Sciences</i>, 16(2):380-384. 6. Qureshi H; M Arshad; A. Akram; N. I Raja; S. Fatima;

	M. S. Amjad. 2016. <u>Ethnopharmacological and phytochemical account of paradise tree (<i>Melia azedarach</i> L.: Meliaceae).</u> <i>Pure and Applied Biology</i>, 5(1):5-14. 7. Hussain M; N. I. Raja; M. Iqbal; A. Iftikhar; H. M. Sadaf; S. Sabir; M. A. Sultan; M. Nasim. 2016. <u>Plantlets Regeneration via Somatic Embryogenesis from the Nucellus Tissues of Kinnow Mandarin (<i>Citrus reticulata</i> L.).</u> <i>American Journal of Plant Sciences</i>, 7(6):798-805. 8. Iqbal M; S. Asif, N. Ilyas, N. I. Raja, M. Hussain, S. Shabir, A. Rauf. 2016. <u>Effect of Plant Derived Smoke on Germination and Post Germination Expression of Wheat (<i>Triticum aestivum</i> L.).</u> <i>American Journal of Plant Sciences</i>, 7(6): 806-813. 9. Mashwani, Z. R; M. A. Khan; N. I. Raja; K. Rehman; M. Ahmad. 2015. Application of Foliar Anatomy to Understand the Taxonomic Position of Weedy Grass Species from Gandgar Range, Western Himalaya, Pakistan. <i>Journal of Biodiversity and Environmental Sciences</i>. 10. Qureshi R, H. Qureshi, H. Shaheen, G. Rahim, W. Ahmed, N. I. Raja. 2012. Medico-Ethnobotanical Knowledge of Jhang Saiyidan, Islamabad, Pakistan. <i>Archives in Disease Sciences</i>, 65(12):1-13. 11. Ahmad F; M. A. Khan; M. Ahmad; M. Arshad; M. Zafar; A. Khan; N. I. Raja and Z. Rehman. 2011. Foliar epidermal anatomy as an aid to the identification of grasses in tribe Aveneae (subfamily Pooideae, Poaceae) from salt range of Pakistan. <i>Journal of Medicinal Plants Research</i>, 5(1):81-87. 12. Raja N. I; H. Rashid; A. Bano; Z. Chaudhary. 2008. Effect of Growth Regulators on Callus Induction and Regeneration in Local Cultivars of Wheat Pakistan. <i>Pakistan Journal of Agricultural Research</i>, 171.21(1-4):165.
Research Interest	Nano- Biotechnology, Modern Agricultural Practices in Pakistan, Plant Biotechnology (Production of Transgenic Crops), Proteomics, Genetic Engineering and Molecular Biology, Plant Cell, Tissue and Organ Culture, Biochemical Analysis of Medicinal Plants, Radiobiology

Impact factor Publications	Impact Factor Publication 1. Khan I., M. A. Raza, ,M. H. Khalid, , N. I. Raja, S. Min, A. Zhang, M. Naeem, A. T. Meraj, N. Iqbal, . Zhang and L. Huang. 2019. <i>In Vitro</i> Effect of Metallic Silver Nanoparticles(AgNPs): A Noval Approach toword the Feasible Production of Biomass and Natural Antioxidants in Pearl Millet (<i>Pennisetum glaucum</i> L.). <i>Applied Ecology and Environmental Research</i>, 179(6): 12877-12892. (Impact factor = 0.689) 2. Khan I., M. A. Raza, M. H. Khalid, S. A. Awan, N. I. Raja, X. Zhang, S. Min , B. C. Wu ,M. J. Hassan and L. Huang. 2019. Physiological and Biochemical Responses of Pearl Millet (<i>Pennisetum glaucum</i> L.) Seedlings Exposed to Silver Nitrate (AgNO₃) and Silver Nanoparticles (AgNPs). <i>International Journal of Environmental Research and Public Health</i> , 16(13):2261 (Impact factor = 2.468) 24. Iqbal, M., A. Ali, H. Rashid, N.I. Raja, N.H. Naveed, Z.R. Mashwani, M. Hussain, M. Ejaz. 2019. Silver Nanoparticles (AgNPs) and Silver Salt (AgNO₃) Elicits Morphogenic and Biochemical Variations in Callus Cultures of Sugarcane. <i>IET Nanobiotechnology</i>. DOI. 10.1049/iet-nbt.2018.5122 (Impact factor = 1.937) 25. Hussain, M., N.I. Raja, Z.R. Mashwani, M. Iqbal, M. Ejaz and S. Aslam. 2019. Green synthesis and evaluation of silver nanoparticles for antimicrobial and biochemical profiling in Kinnow (<i>Citrus reticulata</i> L.) to enhance the fruit quality and productivity under biotic stress. <i>IET Nanobiotechnology</i>. (Impact factor = 1.937) 26. Iqbal, M., A. Ali, H. Rashid, N.I. Raja, N.H. Naveed, Z.R. Mashwani, M. Hussain, M. Ejaz. 2019. Evaluation of sodium alginate and calcium chloride on development of synthetic seeds. <i>Pak. J. Bot.</i>, 51(5): 1569-1574. (Impact factor = 0.69) 27. Ali, A. S. Mohammad, M. A. Khan, N. I. Raja, M. Arif, A. Kamil and ZUR. Mashwani. 2019. Silver
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	nanoparticles elicited in vitro callus cultures for accumulation of biomass and secondary metabolites in <i>Caralluma tuberculata</i>. <i>Artificial Cells. Nanomedicine, and Biotechnology</i>. DOI. 10.1080/21691401.2019.1577884. (Impact factor =3.026) 28. Anum, F. N. I. Raja, M. Hussain, M. Iqbal, S. K. Chaudhari, M. Ehsan, U. Javaid, N. U. Ain. Effect of Green Synthesised Silver Nanoparticles on Morphogenic and Biochemical Variations in Callus Cultures of Kinnow mandarin (<i>Citrus reticulata</i> L.). <i>IET Nanobiotechnology</i>. DOI. 0.1049/iet-nbt.2018.5276. March 2019 (published in I. F=1.937) 29. Waheed H., N. Ilyas, N. I. Raja, T. Mahmood & Z. Ali. 2019. Heavy metal phyto-accumulation in leafy vegetables irrigated with municipal wastewater and human health risk repercussions, <i>International Journal of Phytoremediation</i>, DOI:10.1080/15226514.2018.154057. (Impact factor = 2.059) 30. Iqbal, M., N.I. Raja, M. Hussain, R. Iqbal, S.K. Chaudhari, M.A. Sultan, A. Muneeb and M. Ejaz. 2018. Morphological fabrication of immobilized green synthesized silver nanoparticles. <i>Nanoscience and Nanotechnology Letters</i>, 10,1-7 (Impact factor = 2.917) 31. Iqbal, M., N.I. Raja, Z.R. Mashwani, F.H. Wattoo, M. Hussain, M. Ejaz and H. Saira. 2018. Assessment of silver nanoparticles exposure on physiological, and biochemical changes and antioxidative defence system in wheat (<i>Triticum aestivum</i> L.) under heat stress. <i>IET Nanobiotechnology</i>. (Impact factor = 2.059) 32. Iqbal, M., N.I. Raja, Z.R. Mashwani, F.H. Wattoo, M. Hussain, M. Ejaz. 2018. Assessment of green synthesized silver nanoparticles in wheat seedlings at anatomical level in relation to their uptake, translocation and accumulation. <i>Iranian Journal of Science and Technology: Transection A Science</i>. (Impact factor = 0.757) 33. Hussain, M., N. I. Raja, Z.R. Mashwani, M. Iqbal, S.
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	K. Chaudhari, M. Ejaz, S. Aslam, and F. Yasmeen. 2018. Green Synthesis and Characterization of Silver Nanoparticles and Their Effects on Disease Incidence Against Canker and Biochemical Profile in <i>Citrus reticulata</i> L. <i>Nanoscience and Nanotechnology Letters</i>, 10: 1-8 (Impact factor = 2.917) 34. Hussain, M., N. I. Raja, H. Rashid, Z.R Mashwani, A. Mehmood And M Iqbal. 2018. Establishment of an efficient protocol for plantlets regeneration via direct and indirect organogenesis in <i>Citrus reticulata</i> Blanco (Kinnow Mandarin). <i>Pakistan Journal of Botany</i>, 50(3):1203-1210 (Impact factor = 0.750) 35. Yasmeen. F., N. I. Raja, N. Ilyas & S. Komatsu. 2018. Quantitative Proteomic Analysis of Shoot in Stress Tolerant Wheat Varieties on Copper Nanoparticle Exposure. <i>Plant Molecular Biology Reporter</i>. http://doi.org/10.1007/s11105-018-1082-2 (Impact factor = 1.844) 36. Ejaz M ; N. I. Raja ; <u>M. Iqbal</u> ; M. Hussain and M. Sheeraz. 2018. Effect of Silver Nanoparticles and Silver Nitrate on Growth of Rice under Biotic Stress. <i>IET Nanobiotechnology</i>. (Impact factor = 2.059) 37. <u>Hussain M.</u> ; N. I. Raja ; <u>Z. R. Mashwani</u> ; <u>F. Naz</u> ; <u>M. Iqbal</u> ; <u>S. Aslam</u>. 2018. Green synthesis and characterisation of silver nanoparticles and their effects on antimicrobial efficacy and biochemical profiling in <i>Citrus reticulata</i>. <i>IET Nanobiotechnology</i>, 12(4): 514-519 (Impact factor = 2.059) 38. <u>Hussain M</u> ; N. I. Raja ; <u>M. Iqbal</u> ; <u>M. Ejaz</u> ; <u>S. Aslam</u> ; <u>A. Rehman .</u> ; <u>U. Javaid</u>. 2018. Seed germination and biochemical profile of <i>Citrus reticulata</i> (Kinnow) exposed to green synthesised silver nanoparticles. <i>IET Nanobiotechnology</i>, 12(5): 688-693 (Impact factor = 2.059) 39. Yasmin S; N. I. Raja; S. Hameed; J. K. Brown. 2018. First report of Tomato leaf curl virus and Croton yellow vein mosaic betasatellite infecting chilli plants in Pakistan. <i>New Disease Reports</i>. (Impact factor = 2.42) 40. Yasmin, S., N. I. Raja, S. Hameed, Z. Abbas. 2018. Detection and partial characterization of
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	begomoviruses infecting chilli pepper. <i>International Journal of Biosciences</i>, 13(1): 267-271. (Impact factor = 4.057) 41. Iqbal M, S. Asif, N. Ilyas, Fayyaz-ul-Hassan, N.I. Raja, M. Hussain' M. Ejaz, H. Saira. 2018. Smoke Produced from Plants Waste Material Elicits Growth of Wheat (<i>Triticum Aestivum</i> L.) by Improving Morphological, Physiological and Biochemical Activity. <i>Biotechnology Reports</i>, 17: 35-44. (Impact factor = 0.967) 42. Faiza A, Naveed I R, Noor-Ul-Ain, Uneza J, Farhat Y. 2018. Some Physio-Chemical Properties of <i>Silybum marianum</i> Seed Oil Extract. <i>Current Trends in Biomedical Engineering & Biosciences</i>, 13(5): 555875. (Impact factor = 0.822) 43. Sohail, Z.R. Mashwani, N. I. Raja, A. Ghaffar, M. A. Shah, M. Yasmeen, S. Umar, M. L. Sohail. 2017. Silver nanoparticles- a promising anti-mosquito's agent. <i>Nanoscience and Nanotechnology Letters</i>, 9(12):1875-1890. (Impact factor = 2.917) 44. Yasmin S; N. I. Raja; S. Hameed; J. K. Brown. 2017. <u>First association of Pedilanthus leaf curl virus, Papaya leaf curl virus, Cotton leaf curl Kokhran virus, and Papaya leaf curl beta-satellite with symptomatic chilli pepper in Pakistan.</u> <i>Plant Disease</i>, 110(12): 2155. (Impact factor = 2.941) 45. Hussain M., N. I. Raja, M. Iqbal, S. Aslam. 2017. Applications of Plant Flavonoids in the Green Synthesis of Colloidal Silver Nanoparticles and Impacts on Human Health. <i>Iranian Journal of Science and Technology: Transection A Science</i>. (Impact factor = 0.747) 46. Iqbal M., N. I. Raja, Z. R. Mashwani, M. Hussain, M. Ejaz, F. Yasmeen. 2017. Effect of Silver Nanoparticles on Growth of Wheat Under Heat Stress. <i>Iranian Journal of Science and Technology: Transection A Science</i>. (Impact factor = 0.747) 47. Hussain M; N. I. Raja; Z. R. Mashwani; M. Iqbal; M. Ejaz; F. Yasmeen; Sohail. 2017. In vitro germination and biochemical profiling of <i>Citrus reticulata</i> in response to green synthesized zinc and copper nanoparticles. <i>IET Nanobiotechnology</i>, 11(7):
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	790-796. (Impact factor = 2.059) 48. Hussain M; N. I. Raja; Z.R. Mashwani; M. Iqbal; S. Sabir; F. Yasmeen. 2017. <i>In vitro</i> seed germination and biochemical profiling of <i>Artemisia absinthium</i> exposed to various metallic nanoparticles. <i>3 Biotech</i>, 7:101. (Impact factor = 1.497) 49. Aslam S; N. I. Raja; M. Hussain; M. Iqbal; M. Ejaz; D. Ashfaq; H. Fatima; M. A. Shah, Abd-Ur-Rehman; M. Ehsan. 2017. Current Status of <i>Withania somnifera</i> (L.) Dunal: An Endangered Medicinal Plant from Himalaya. <i>American Journal of Plant Sciences</i>, 8: 1159-1169. (Impact factor = 0.36) 50. Yasmeen F; N. I. Raja; A. Razzaq; S. Komatsu. 2017. Proteomic and physiological analyses of wheat seeds exposed to copper and iron nanoparticles. <i>Biochimica et Biophysica Acta (BBA) - Proteins and Proteomics</i>, 1865(1): 28-42. (Impact factor = 2.609) 51. Saeed M; N. Ilyas; A. Akram, N. I Raja; R. Mazhar; F. Bibi; W. Seerat; S. Kanwal; N. Batool. 2016. Effect of drought stress on Brassica crops and its mitigation by inoculation of PGPR. <i>International Journal of Biosciences</i>, 9(6): 282-291. (Impact factor = 3.873) 52. Iqbal M; N. I. Raja; S. Asif; N. Ilyas; M. Hussain; F. Yasmeen; M. Ejaz; M. A. Sultan; S. Aslam; H. Javed. 2016. <i>In Vitro</i> Study of Callogenesis and Regeneration Potential of Elite Wheat (<i>Triticum aestivum</i> L.) Cultivars. <i>American Journal of Plant Sciences</i>, 7:2515-2526. (Impact factor = 0.36) 53. Sabir S; A. Akram; N. I Raja; Z.R. Mashwani; Sohail; H. M. Sadaf; M. Hussain; I. Riaz; N. Ahmad, E. Ahmed. 2016. A probe into the medicinal potential of <i>Viola canescens</i>– A threatened medicinal plant from Himalaya. <i>Journal of Coastal Life Medicine</i>, 4(7):575-579. (Impact factor = 0.35) 54. Hussain M, Y. Bibi, N. I. Raja, M. Iqbal, S. Aslam, N. Tahir, M. Imran, A. Iftikhar. 2016. A review of therapeutic potential of <i>Ajuga bracteosa</i>: A critically endangered plant from Himalaya. <i>Journal of Coastal Life Medicine</i>, 4(11):918-924. (Impact factor = 0.35) 55. Yasmeen F; N. I. Raja; A. Razzaq; S. Komatsu.
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Courses taught	- Diversity in vascular plant - Diversity in non vascular plants - Biodiversity - Plant Ecology - General Pharmacognosy

	• Concept in Genetics
M. Phil thesis supervised	• Sherish Javed (2011) Phytochemical quantification and biological screening of <i>Artemesia vulgaris</i> Linn. • Uzma Bashir (2011) Chemical and Biological characterization of <i>Boerhavia procumbens</i> • Saadia Irum (2012) Phytochemical and antioxidant potential of <i>Berberis lycium</i> Royle. • Humara Amin (2013) Phytochemical and Pharmacognostic evaluation of <i>Amaranthus viridis</i> and <i>A.spinosus</i> • Raheela Ismail (2013) Nutraceutical Potential of wild vegetables <i>Rumex hastatus</i> and <i>R. nepalensis</i> • Shabnum Bibi (2013) Pharmacognostic and phytochemical screening of <i>Sisymbrium irio</i> L. • Arsh Bibi (2014) Comparative secondary metabolites analysis and antioxidant potential in calli of <i>Nigella sativa</i> L. • Ayesha Rehman (2014) Differential secondary metabolites analysis and antioxidant potential in calli of <i>Cassia asbus</i> L. • Tasneem Bashir (2015) Phytochemical composition and nutraceutical evaluation of <i>Morus alba</i> fruit. • Ubaid Ul Hassan (2015) Phytochemical characterization and nutraceutical potential of <i>Ziziphus muratiana</i> fruit. • Seemab Gul (2016) Biological and analytical characterization of sea-buckthorn (<i>Hippophae rhamnoides</i>) seed oil. • Rahmat Wali (2016) Quantitative ethnomedicinal study of plant used in Fairy Meadow National Park, Diamir, Gilgit Baltistan. • Malik Shamsher (2017) Ethnobiology of Taxila Valley, A quantitative approach. • Umme Amara (2017) Response of <i>Brassica napus</i> to Zinc nanoparticles under controlled condition. • Rahimullah (2017) Effect of silver nanoparticle on the growth, yield and quality of Canola. • Usman Ali (2017) Phytochemical assessment and antioxidant potential of selected Pteridophytes from Poonch, Azad Kashmir. • Amir Ali (2018) Effect of silver nanoparticle on regeneration and antioxidant capacity of <i>Caralluma tuberculata</i>. • Umm-e-Ammara (2018) in-vitro Seed germination, growth

	and biochemical profile of Zea mays in response to silver nanoparticle. • Salahuddin (2019) Exploration of Plant based ethnomedicines used by the local communities along Pak-Afghan Border region, Khyber agency. • Khalid Kamran (2019) Impact of Foliar application of green Zinc nanoparticles on secondary metabolites of Canola Seeds. • Marij Khan (2019) Iron Nanoparticles assisted biofortification of wheat (<i>Triticum aestivum</i>). • Asma Ibrar (2019) Biological evaluation of various solvent extracts of <i>Hylotelephium ewersii</i> and <i>Oxyria digyna</i>. • Kiran Gul (2019) Biological evaluation of various solvent extracts of <i>Artemisia glacialis</i> and <i>Rheum australe</i>. • Safia Rani (2019) Zinc Nanoparticles assisted biofortification of wheat (<i>Triticum aestivum</i>) •
Ph. D thesis supervised	• Muhammad Faraz Khan (2019) Ethnobotanical profile and biological screening of selected medicinal plants of Sudhanoti, Azad Kashmir. • Sohail (2020) Response of Canola to Green Synthesized Zinc Nanoparticle.
Ph. D thesis co-supervised	• Evaluation of Anti-microbial and Antioxidant Activity of Green Silver Nanoparticles in <i>Citrus reticulata</i> L. (Mubashir Hussain Ph.D. completed in 2019).
Publications	
Research Interest	Nanobiotechnology; Improvement of Oilseed Crops, Medicinal Plants; Ethnobotany.
Impact factor Publications	1. T. Khan N. Ullah, M. A. Khan, ZUR Mashwani, A. Nadhman. 2019. Plant-based gold nanoparticles; a comprehensive review of the decade-long research on synthesis, mechanistic aspects and diverse applications. 272(102017) https://doi.org/10.1016/j.cis.2019.102017 (IF:8.243) 2. Wali, R., K. Rahman, N. I. Raja, R. Qureshi, R. W. Bussmann, ZUR. Mashwani. 2019. A quantitative medicobotanical expedition of Fairy Meadows National Park, Diamir, Gilgit Baltistan, Pakistan. <i>Ethnobotany Research & Applications</i>. 18(35)1 -30 http://dx.doi.org/10.32859/era 3. Ali, A. S. Mohammad, M. A. Khan, N. I. Raja, M. Arif, A. Kamil and ZUR. Mashwani. 2019. Silver nanoparticles elicited in vitro callus cultures for accumulation of biomass and

	secondary metabolites in <i>Caralluma tuberculata</i>. Artificial Cells, Nanomedicine, and Biotechnology. 47(1): 715-724 https://doi.org/10.1080/21691401.2019.1577884 (IF: 4.462)
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10.	Bibi, A., M. A. Khan, M. Adil and ZUR Mashwani. 2018.

	Production of callus biomass and antioxidant secondary metabolites in black cumin. Journal of Animal and Plant Sciences. 28(5):1321-1328 (IF: 0.529) 11. Iqbal, M., N. I. Raja, ZUR. Mashwani, F. H. Wattoo, M. Hussain, M. Ejaz, H. Saira. 2018. Assessment of AgNPs exposure on physiological and biochemical changes and antioxidative defence system in wheat (<i>Triticum aestivum</i> L) under heat stress. IET Nanobiotechnology. DOI: 10.1049/iet-nbt.2018.5041 (IF:1.925) 12. Iqbal, M., N. I. Raja, ZUR. Mashwani, F. H. Wattoo, M. Hussain, M. Ejaz. 2018. Assessment of Green Synthesized Silver Nanoparticles in Wheat Seedlings at the Anatomical Level in Relation to their Uptake, Translocation and Accumulation. Iranian Journal of Science and Technology, Transactions A: Science DOI: 10.1007/s40995-018-0639-0 (IF:0.692) 13. Hussain, M., N. I. Raja, ZUR Mashwani, M. Iqbal, S. K. Chaudhari, M. Ejaz, S. Aslam, and F. Yasmeen. 2018. Green Synthesis and Characterization of Silver Nanoparticles and Their Effects on Disease Incidence Against Canker and Biochemical Profile in <i>Citrus reticulata</i> L. Nanoscience and Nanotechnology Letters. 10:1–8 (IF:2.917) 14. Khan MF, Tang H, Lyles JT, Pineau R, Mashwani ZUR and Quave CL. 2018. Antibacterial Properties of Medicinal Plants from Pakistan Against Multidrug-Resistant ESKAPE Pathogens. Frontier in Pharmacology. 9:815. doi: 10.3389/fphar.2018.00815 (IF:3.845) 15. Ali, H., M. A. Khan, W. K. Kayani, T. Khan, ZUR Mashwani, N. Ullah and R.S. Khan. 2018. Thidiazuron regulated growth, secondary metabolism and essential oil profile in shoot culture of <i>Ajuga bracteosa</i>. Industrial Crops and Products. 121: 418-427 (IF:4.191) 16. Mashwani, ZUR., A. Nadhman, M.A. Khan. 2018. In-vitro antilishmanial and antibacterial potential of Pakistani traditional medical plants. International Journal of Infectious Diseases. 73S:264 https://doi.org/10.1016/j.ijid.2018.04.4016 (IF:3.538) 17. Ejaz, M., N.I. Raja, ZUR. Mashwani, M.S. Ahmad, M. Hussain, M. Iqbal. 2018. Effect of silver nanoparticles and silver nitrate on growth of rice under biotic stress. IET Nanobiotechnology. DOI: 10.1049/iet-nbt.2018.0057
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M. Phil thesis supervised	1. Pharmacological Studies on Selected Plant Species from Thal Desert, Pakistan (Khurshid Anwar, Thesis submitted. 2020-2021) 2. Ethnomedicinal Survey of Tehsil Malakwal, District Mandi-Bahauddin, Punjab, Pakistan (Tayyaba Munawar, Thesis Submitted 2020-

	2021) 3. Evaluation of Immune Boosting Potential of Selected Medicinal Plant Species (Irum Khalid, Research work in Process 2021-2022) 4. Cytotoxicity Assessment of Fractionated Extracts of <i>Euphorbia royleana</i> (Neelum Naheed, Research work in process 2021-2022) 5. Biological Efficacy of Purified Compounds from Selected plant Species (Ayesha Khanum, Research work in process 2021-2022) 6. Cytotoxic and Antimicrobial Efficacy of <i>Alhagi maurorum</i> (Syeda Sobia Gillani M.Phil completed in 2020) 7. Pharmacological Evaluation of <i>Pseudocryptotis foetida</i> Extracts (Tayyiba Afzal M.Phil completed in 2020) 8. Antioxidant and Phytochemical Analysis of <i>Prinsepia utilis</i> Extracts (Saiqa Sharif M.Phil completed in 2020) 9. Cytotoxicity Assessment of <i>Thalictrum foliolosum</i> leaves and Roots Extracts (Rozina Ishaq M.Phil completed in 2020) 10. Green Synthesis Of Silver nanoparticles from selected Species and their effect on Bioactivities (Aroosa Habib M.Phil completed in 2019) 11. Bioactivities on <i>Ficus palmata</i> and <i>Calotropis Procera</i> Extracts (Raafia Batool Chaudhry M.Phil completed in 2019) 12. Antioxidant and antimicrobial effects of <i>Withania Coagulans</i> Fruit Extracts (Bibi Fiza M.Phil completed in 2019) 13. Nutraceutical analysis of some underutilized plant species (Kiran Javed M.Phil completed in 2018) 14. Nutraceutical Assessment of some selected wild vegetables (Basma Jalil M.Phil completed in 2018) 15. Ethnomedicinal survey of selected villages of district Bagh Azad Jammu and Kashmir (Tasneem Maqsood M.Phil completed in 2018) 16. Evaluation of phytotoxic activity of <i>Thevetia Peruviana</i> extracts (Najma Parveen M.Phil completed in 2018) 17. Investigation of Cytotoxic and Antimicrobial Potential of <i>Myrsine Africana</i> (Sadaf Laraib M.Phil completed in 2017) 18. Antioxidant and Cytotoxic Activities of Selected
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	Ethnomedicinal Plants of Balakot Region (Uzma Sarwar M.Phil completed in 2017) 19. Nutraceutical Potential of Some Selected Plants of Tehsil Plandri AJK (Kiran Naseem M.Phil completed in 2017) 20. Assessment of antioxidant Potential of Selected Aromatic Plants (Qurat Ul Ain M.Phil completed in 2017) 21. Nutraceutical Assessment of <i>Capsella bursa-pastoris</i> (Iqra Riaz M.Phil completed in 2016) 22. Nutritional and Medicinal Evaluation of <i>Solanum villosum</i> (Nabeela Ahmad M.Phil completed in 2016) 23. Antioxidant and Cytotoxic Evaluation of <i>Caralluma tuberculata</i> (Mudrikah M.Phil completed in 2015) 24. In vitro Toxicity Assessment of <i>Cedrela serrata</i> Extract (Shaista Tabasum M.Phil completed in 2015) 25. Pharmacological Studies on <i>Bidens biternata</i> (Kulsoom Zahara M.Phil completed in 2015) 26. Biochemical Evaluation of <i>Kickxia ramosissima</i> (Zakia Binish M.Phil completed in 2014) 27. Investigation on Antimicrobial Effects of <i>Echinops echinatus</i> (Lunba Shafique M.Phil completed in 2014)
Ph. D thesis supervised	68. Identification and Characterization of Antioxidant and Cytotoxic Activities of Selected Medicinal Plants of Gallyat Region, Pakistan (Muhammad Ishaque Ph.D.completed in 2018). 69. Bioassay Guided Assessment of Selected Medicinal Plants of Pakistan. (Huma Mehreen Sadaf Ph.D. In Process of foreign evaluation 2021) 70. Bioassay guided characterization of selected <i>Bidens</i> species (Kulsoom Zahara Ph.D. In Process of foreign evaluation 2021) 71. Cytotoxicity Guided Screening and Characterization of Selected Solanaceous Plant

	Extracts. (Iqra Riaz Ph.D. In thesis write up 2021). 72. Evaluation of plant extract based strategy for food bio-preservation (Nadia Sardar Ph.D. In thesis write up 2021).
Ph. D thesis CO- supervised	1. Assessment of Growth and Physiochemical Responses of Wheat to Chemo-Blended Silver and Iron Nanoparticles (Hafiz Muhammad Jhanzab Ph.D.completed in 2019). 2. Ecobiological and Allelochemical Characterization of Selected Invasive Plants of Pothwar Region of Pakistan (Huma Qureshi Ph.D.completed in 2018). 3. Taxonomic, Phytochemical and Biological Screening of Some Selected Medicinal Plants of Lesser Himalaya Pakistan. (Ejaz Ahmed Ph.D.completed in 2018).
Publications (Non impact factor)	18. Waheed, A., Bibi, Y., Nisa, S., Chaudhary, F. M., Sahreen, S., & Zia, M. (2013). Inhibition of human breast and colorectal cancer cells by Viburnum foetens L. extracts in vitro. <i>Asian Pacific journal of tropical disease</i>, 3(1), 32-36. 19. Sarwar, S., Dietz, B., Ping, Y., Bibi, Y., Nisa, S., & Chaudhary, M. F. (2013). Novel anti-uterus cancer potential of fruit extract of Lantana camara as exhibited through the inhibition of alkaline phosphatase in human endometrial adenocarcinomatic cell line. <i>Journal of Medicinal Plants Research</i>, 7(18), 1216-1221. 20. Batool, N., Bibi, Y., & Ilyas, N. (2014). Current status of Ulmus wallichiana: Himalayan endangered Elm. <i>Pure and Applied Biology</i>, 3(2), 60.

21. Chaudhari, S. K., **Bibi, Y.**, & Arshad, M. (2014). Podophyllum hexandrum: An endangered medicinal plant from Pakistan. *Pure and Applied Biology*, 3(1), 19.
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25. Qureshi, H., Arshad, M., & **Bibi, Y.** (2014). Toxicity assessment and phytochemical analysis of Broussonetia papyrifera and Lantana camara: Two notorious invasive plant species. *Journal of Biodiversity and Environmental Sciences*, 5(2), 508-517.
26. Zahara, K., **Bibi, Y.**, Tabassum, S., Bashir, T., Haider, S., Araa, A., & Ajmal, M. (2015). A review on pharmacological properties of Bidens biternata: A potential nutraceutical. *Asian Pacific Journal of Tropical Disease*, 5(8), 595-599.
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Research Interest	Plant Based Natural Products, Bioevaluation, Isolation & Chemical Characterization
Impact factor Publications	Impact Factor Publication 40. Ahmed, S., Owen, C. P., Waheed, A., Nisa, S., Bibi, Y., & Chaudhary, M. F. (2009). Biochemical evaluation of extracts from <i>Caralluma tuberculata</i> against hormone-dependent breast cancer cells. <i>Journal of Pharmacy and Pharmacology</i> 1, A-135.

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	factor = 0.13). 74. Vaseer, S. G., Rasheed, M., Ansar, M., Bibi, Y., Shah, S., Hassan, A., ... & Husnain, Z. (2019). Cobalt application improves the growth and development of mung bean. <i>Pakistan Journal of Agricultural Research</i>, 33(2), 303-310. (Impact factor = 0.74). 75. Ishaque, M., Bibi, Y., Qayyum, A., & Iriti, M. (2021). Isolation and Structural Confirmation of Xanthone Isomers from <i>Dryopteris ramosa</i> (Hope) C. Chr. and Their In Vitro Antioxidant Mechanism. <i>Arabian Journal for Science and Engineering</i>, 46(6), 5327-5337. (Impact factor = 1.71). 76. Qayyum, A., Al Ayoubi, S., Sher, A., Bibi, Y., Ahmad, S., Shen, Z., & Jenks, M. A. (2021). Improvement in Drought Tolerance in Bread Wheat is Related to an Improvement in Osmolyte Production, Antioxidant Enzyme Activities, and Gaseous Exchange. <i>Saudi Journal of Biological Sciences</i>. (Impact factor = 2.802). 77. Sadaf, H. M., Bibi, Y., Arshad, M., Razzaq, A., Ahmad, S., Iriti, M., & Qayyum, A. (2021). Analysis of <i>Peganum harmala</i>, <i>Melia azedarach</i> and <i>Morus alba</i> extracts against six lethal human cancer cells and oxidative stress along with chemical characterization through advance Fourier Transform and Nuclear Magnetic Resonance spectroscopic methods towards green chemotherapeutic agents. <i>Saudi Pharmaceutical Journal</i>. (Impact factor = 2.802). 78. Ishaque, M., Bibi, Y., & Qayyum, A. (2021). Fruits of <i>Rosa brunonii</i> Lindl: An Ethnomedicinal Plant from Foothills of Himalaya with Antibacterial, Antitumor and Cytotoxic Properties. <i>Arabian Journal for Science and Engineering</i>, 1-9. (Impact factor = 1.711). 79. Noreen, H., Alam, S., Al Ayoubi, S., Qayyum, A., Sadiqi, S., Atiq, S., Bibi, Y., & Ahmad, S. (2021). Mechanism of rice bran lipase inhibition through fermentation activity of probiotic bacteria. <i>Saudi Journal of Biological Sciences</i>. (Impact factor = 2.802). 80. Laraib, S., Sharif, S., Bibi, Y., Nisa, S., Aziz, R., & Qayyum, A. (2021). Phytochemical Analysis and Some Bioactivities of Leaves and Fruits of <i>Myrsine africana</i> Linn. <i>Arabian Journal for Science and Engineering</i>, 46(1), 53-63. (Impact factor = 1.71). 81. Binish, Z., Bibi, Y., Zahara, K., Nisa, S., Manaf, A.,
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	Qayyum, A., & Sher, A. (2021). Protective Effect of <i>Kickxia ramosissima</i> (Wall.) Janchn Extracts Against Pathogenic Bacterial Strains and Free Radicals. <i>Arabian Journal for Science and Engineering</i>, 46(1), 83-91. (Impact factor =1.71). 82. Qayyum, A., Al Ayoubi, S., Sher, A., Bibi, Y., Ahmad, S., Shen, Z., & Jenks, M. A. (2021). Improvement in Drought Tolerance in Bread Wheat is Related to an Improvement in Osmolyte Production, Antioxidant Enzyme Activities, and Gaseous Exchange. <i>Saudi Journal of Biological Sciences</i>. (Impact factor =2.802). 83. Sher, Ahmad, Xiukang Wang, Abdul Sattar, Muhammad Ijaz, Sami Ul-Allah, Muhammad Nasrullah, Yamin Bibi, Abdul Manaf, Sajid Fiaz, and Abdul Qayyum. "Exogenous Application of Thiourea for Improving the Productivity and Nutritional Quality of Bread Wheat (<i>Triticum aestivum</i> L.)." <i>Agronomy</i> 11, no. 7 (2021): 1432. (Impact factor =3.417). 84. Mujaddidi, N., Nisa, S., Al Ayoubi, S., Bibi, Y., Khan, S., Sabir, M., ... & Qayyum, A. (2021). Pharmacological properties of biogenically synthesized silver nanoparticles using endophyte <i>Bacillus cereus</i> extract of <i>Berberis lyceum</i> against oxidative stress and pathogenic multidrug-resistant bacteria. <i>Saudi Journal of Biological Sciences</i>. (Impact factor =4.219).
Book chapters	• Kulsoom Zahara & Yamin Bibi. 2020. Advancement in Plant Based Drug Development to Overcome Multivariate Drug Resistance in Today's Drug Discovery" In: RECENT PROGRESS IN MEDICINAL PLANTS Vol. 51 - Antimicrobial Resistance and Bioactive Natural Products". EDITOR :Dr. Sujogya Kumar Panda and Dr. Debasmita Dubey. Studium Press, USA.

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Courses taught	• Diversity of non-vascular plants • Molecular plant development • Environmental toxicology & bioremediation

	• Environmental biotechnology • Environmental Pollution • General Biology • Economic Biology
Research Interest	Plant Biotechnology, Environmental toxicology & bioremediation, Environmental biotechnology, Sustainable Biomass Energy Production.
M. Phil thesis supervise (on-going)	1. Investigation of methyl ester potentiality of waste seeds of <i>Xanthium spinosum</i> 2. Eco-taxonomic studies of PaharPur range district Dera Ismail Khan 3. Optimal generation of renewable energy from non-edible biomass via pyrolysis 4. Utilization of glycerol to glycerol carbonate via transesterification reaction in a Bubble mediated reactor
Impact factor Publications	Latest Publications 1. M Baessa, MJ Rodrigues, C Pereira, T Santos, N da Rosa Neng, JMF Nogueira, L Barreira, J Varela, H Ahmed, Asif S, SA Boukhari, WK Kayani, Khawaja Shafique Ahmad, G Zengin, A Mollica, L Custódio (2019) A comparative study of the in vitro enzyme inhibitory and antioxidant activities of <i>Butea monosperma</i> (Lam.) Taub. and <i>Sesbania grandiflora</i> (L.) Poiret from Pakistan: New sources of natural products for public health problems, South African Journal of Botany, 120, 146-156, Impact Factor = 1.504 2. Iqbal M., Asif S., Ilyas N., Hassan F., Raja N.I., Hussain M., Ejaz M., Saira H., (2018) Smoke produced from plants waste material elicits growth of wheat (<i>Triticum aestivum</i> L.) by improving morphological, physiological and biochemical

	activity, <i>Biotechnology Reports</i>, 17, 35-44. Impact Factor = 2.61 3. Asif S., Ahmed M., Bokhari A., Chuah L.F., Klemes J., Akbar M.M., Sultana S., Yusup S., (2017) Methyl ester synthesis of Pistacia khinjuk seed oil by ultrasonic-assisted cavitation system, <i>Industrial Crops and Products</i>, 108, 336-347. Impact Factor = 4.191 4. Asif S., Chuah L.F., Klemes J., Ahmed M., Akbar M.M., Keat T.L., Fatima, A., (2017) Cleaner production of methyl ester from non-edible feedstock by ultrasonic-assisted cavitation system, <i>Journal of Cleaner Production</i>, 161, 1360-1373. Impact Factor = 6.395 5. Bokhari A., Yusup S., Chuah L.F., Klemes J., Asif S., Ali B., Akbar MM., Kamil R.N.M., (2017) Pilot scale intensification of rubber seed (<i>Hevea brasiliensis</i>) oil via chemical interesterification using hydrodynamic cavitation technology, <i>Bioresourse Technology</i>, 242, 272-282. Impact Factor = 6.669 6. Rozina, Asif S., Ahmad M., Zafar M., Ali N., (2017) Prospects and potential of fatty acid methyl esters of some non-edible seed oils for use as biodiesel in Pakistan, <i>Renewable and Sustainable Energy Reviews</i>, 74, 687-702. Impact Factor = 10.556 7. Ahmed H., Naz M., Mustafa I., Khan M.R., Asif S., Afzal M.S., Arshad M., Naveed M.U., Ali S., Simsek S., (2017) Impact of epidemiological factors on the prevalence, intensity and distribution of
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	ectoparasites in pigeons, Journal of Parasitic Diseases, 41(4), 1074-1081. Impact Factor = 0.50 8. Bostan, N., Naeem, M., Afzal, M.S., Shah, Z.H., Mustafa, I., Arshad, M., Haider, W., Khan, A.A.,Asif, S., Khan, M.R., Ahmad, S.S., Ali, S., Naveed, M. and Ahmed, H. (2016). Sero-prevalence of Hepatitis B and C Virus from rural areasof northern Punjab (Sargodha District), Pakistan. Tropical Biomedicine 33(4): 599–607. Impact Factor = 1.34 9. Huma Qureshi, Saira Asif, Haroon Ahmed, Hassan A. Al-Kahtani & KhizarHayat (2016). Chemical composition and medicinal significanceof Fagonia cretica: a review. Natural Product Research. 30(06):625-639. Impact Factor = 1.999 10. Mustafa, I., Ghani, A., Arif, N., Asif, S., Khan, M. R., Waqas, A., ... & Malik, I. U. (2015). Comparative metal profiles in different organs of house sparrow (Passer domesticus) and black kite (Milvus migrans) in Sargodha District, Punjab, Pakistan. <i>Pakistan Journal of Zoology</i>, 47(4). Impact Factor = 0.790 11. Irfan Mustafa,Abdul Ghani,Nousheen Arif, Saira Asif, Mobushir Riaz Khan, Ayesha Waqas, (2015) Comparative Metal Profiles in Different Organs of House Sparrow (Passer domesticus) and Black Kite (Milvus migrans) in Sargodha District, Punjab, Pakistan. Pakistan J. Zool., vol. 47(4), pp. 1103-1108. Impact Factor = 0.790
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Courses taught	• Diversity of non-vascular plants • Molecular plant development • Environmental toxicology & bioremediation • Environmental biotechnology • Environmental Pollution • General Biology • Economic Biology
Research Interest	Plant Biotechnology, Environmental toxicology & bioremediation, Environmental biotechnology, Sustainable Biomass Energy Production.
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	1108. Impact Factor = 0.790
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Courses taught	• Ethnobotany • Research Techniques and instrumentation • Phytosociology • Plant Ecology • Plant Taxonomy and Embryology • Biodiversity • Principles of Bio technology
M. Phil thesis supervised	• Taxonomic diversity of family Asteraceae in district Dera Ismail khan, Pakistan. • Evaluation of antifungal activity of green Maganese nanoparticles against wheat rust • Ethnogynocological surveys of plants in Gujrat • Immobilization of heavy metals from contaminated soil and evaluation of multi-variant nanoparticles from <i>olea europaea</i>
Ph. D thesis supervised	• Effect of Nano fertilizers on growth, productivity and bio fortification of <i>Brassica campestris</i> • Pollen diversity in honey samples of Bee flora in division Bannuu KPK Pakistan
Ph. D thesis co-supervised	NIL
Publications (Non impact factor)	NIL
Research Interest	Plant Ecology; Phytosociology; Plant Biosystematics; Plant Taxonomy; Medicinal Plants; Ethnobotany, Biodiversity
Impact factor Publications	• Identification of Sulaiman and Kirthar range flora using Palynomorphological features through LM and SEM
	• Paly morphological study of weedy Melliferous(Bee visited plants using light Microscopic techniues from Southern Khyber Pakhtunkhwa, Pakistan
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SUMMARY AND CONCLUSION

This Self-Assessment Report (SAR) covers activities and achievements in Ph.D. program carried out in department of Botany, Pir Mehr Ali Shah Arid Agriculture Rawalpindi from fall 2016- fall 2018. During this period, Botany Department has produced a large number of Ph.Ds.

International academic and research standards are highly observed in the department. The efficiency and effectiveness was measured through branded standards and was found to be acceptable. Survey indicates a good level of research work being pursued in the department. In Botany department 98 percent of faculty members are HEC approved supervisors. Ph.D graduates are prepared to fill faculty and research scientist positions at research-intensive universities or secure positions at research institutes and centers that conduct and manage large-scale education-based evaluations.

Upon successful program completion, we expect that graduates will be prepared for employment in research/faculty positions at top-tier research institutions. They will contribute to the interdisciplinary public discourse on education; engage in and promote evidence-based practices through the application of rigorous methodology; link education research to policy and practice ; provide leadership in the field by developing an independent line of ethical and culturally responsive research; contribute to development of the next generation of scholars; be able to influence school policy and reform. Although there are less HEC indigenous scholarship available to Ph.D. students but the department is trying to facilitate their research work. Students further avail IRSIP program of HEC to incorporate advance techniques in their research.

Novel research finding are being published in ISI recognized impact factor journals with improved citation. Research being carried by Ph.D. students is also strengthening research activities in department. Collaborations with other institutions and universities are being developed to boost up the research activities. Institutional facilities need to be strengthened. Major shortcomings have been observed in survey for Ph.D. program which include lack of lecture halls, laboratory equipment's, gas supply to laboratories and departmental library and

computer laboratory. Latest equipment like GC-MS is another limitation. By institutional support will greatly promote and strengthen academic, research, management and leadership capabilities.

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