Pir Mehr Ali Shah

Arid Agriculture University, Rawalpindi

Self-Assessment Report (2021-22)

Department of Botany

(BS Botany)

Program Self-Assessment Team

- Prof. Dr. Rahmatullah Qureshi(Coordinator)
- Dr.Khafsa Malik(Member)
- Dr. Noshin Ilyas (Member)

CONTENTS

Introduction

The Barani Agriculture College established in 1980 and botany is being taught different semesters since then. These supported B.Sc. Agriculture strand till 1996. The College was upgraded to a university status in 1995. Since then, Botany subjects were offered at Masters Level. The discipline of Botany in PMAS AAUR was introduced as a separate Department in 1995. The main Program at initial level was M.Sc started in 1996.Since then, now Botany subjects are offered in M.Sc.,M.Phil.and Ph.D.degree programs.Postgraduate classes forM.Sc are taken both in morning and evening session.

About 165 students have enrolled in BS of this department. Department has a broad curriculum and 1/3 courses are also contributed to BS Biology besides B.Sc (Hons.), Agriculture, MBA (Agri-Business), Department of Forestry and Range Management. The graduates of this department are ranked amongst the best of country. Our faculty in currently composed of 9faculty members all arePh.D. And the other are M.Phil degree holders and near completion of their Ph.D. The faculty members are specialized in various fields of Botany i.e. plant physiology, taxonomy, ecology ethnobotany, plant pathology, Ecotoxicology, and environmental pollution and gene transformation

An extensive scheme of studies has been developed for post graduate degree program in the field of Botany including all major aspects such as ecology, genetics, physiology, taxonomy, anatomy, molecular biology of plants and biochemistry. These classes are taught by faculty who enjoy teaching and have a commitment to education. Besides teaching faculty members also ensures students participation in laboratory exercises, practical's as well as field sites. The department of Botany is featured by a highly competent teaching group in plant sciences. Members of the faculty are working in many specialized fields of plant sciences and are endeavoring to enhance our knowledge of the plant world.

Schemes of studies are being constantly reviewed and updated as per HEC's recommendations. The department offers a varietyof study programs to enhance students' professional training and career opportunities. It regularly holds national and international training workshop, seminars to exchange knowledge and views.The faculty is actively engaged in a number of research

Projects; some of which are internationally collaborated and funded. Department of Botany prepares students for careers in industry, government agencies and teaching jobs.

SECTION 1

Components of Self-Assessment Process:

This Self-Assessment has been prescribed on the cradle of the eight criteria described in selfAssessment 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 dynamically tangled in education of diversity of courses and worth Exploration programs to lift and settle the M.Sc students' expert proficiency level.

Standards1-1: Documented measurable objectives

Mission of the Program:

. Our Mission is to regulate, recommend, and conduct acquaintance regarding basic plant biology and fetch supremacy in the botanical sciences.

Objectives:

1. To develop the discipline of teaching and research for the students.
2. To impart basic and practical knowledge and scientific skills in the concerned field.
3. To train the students for Integration of multidimensional field.
4. Anticipation of newteaching/ researchable areas.

Outcomes:

1. Strengthening of the Department was carried out on modern lines for basic education.
2. The students were imparted basic theoretical and practical knowledge.
3. To inculcate scientific skills and knowledge.
4. Anticipation of new teaching areas was achieved through updation of the curricula.

Sr. #	Objectives	HowMeasured	WhenMeasured	Improvement Identified	ImprovementMade
1.	Strengtheningof discipline	Onthebasis of SAR and conductance of examination	During the conductance of examination and SAR in each semester	Teaching methodology and course updation needed to be improved	Teaching method have beenrevisedinorderto make them more attractive and understandable
2.	To impart basic and applied knowledgetothe undergraduates students	knowledgeof students was measured through conducting examsduring the semester	After the conductance of exams	Some new coursesneedto be included in the curriculum	Curriculaisregularly updated

3.	Integration of multidimensional field	Different new courses	Attheendof semester	Relatedsubject to be recommended orstudied	Enhancement of knowledgeandvision
4.	Anticipationof new teaching areas	With the need of current advancement in the relevant areas	Continuous activity	Newtopicsto beincludedin lectures.	Updationof courses.

+=Moderatelysatisfactory, ++ =Satisfactory, +++=Highlysatisfactory

Program objectives

Outcomes	Objectives			
	1	2	3	4
1	+++	+++	+++	++
2	+++	++	++	+++
3	+++	++	+++	+++
4	++	+++	++	+++

MeetingStandards1-2: 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

Maximumof 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 results of this survey are presented graphically.

Standards 1-3: Emphasis on student involvement in class activity/teacher interaction. More emphasis on practical.

Strength of program

Updatedcourse, curriculum in accordance with HEC criteria overall student satisfaction.

Weakness of program

Practicals should be more emphasized.

Future development

Improvement in class, infrastructuree. Glecture halls, multimedia, chair.

Standard1-4:

- Number of students enrolled are 165.
- Student faculty ratio 1:20.
- Average grade point as per university policy.
- Employ were 80% satisfy.
- Student evaluation was good.
- Not applicable to M.SC.
- Seed certification, plant identification, soil fertility.
- All are well satisfied.

STUDENTS
COURSE & TEACHER
EVALUATION
PROFORMA

FALL 2021

BS

COURSE EVALUATION

FALL 2021

BS

TEACHER EVALUATION

No Record Available

SPRING 2022

BS

COURSE EVALUATION

No record available.

SPRING 2022

BS

TEACHER EVALUATION

No record available.

Fall 2022

BS

COURSE EVALUATION

No record available.

FALL 2022

BS

TEACHER EVALUATION

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PERFORMA 1

Teacher Evaluation

FALL-22

Session Name: FALL-22

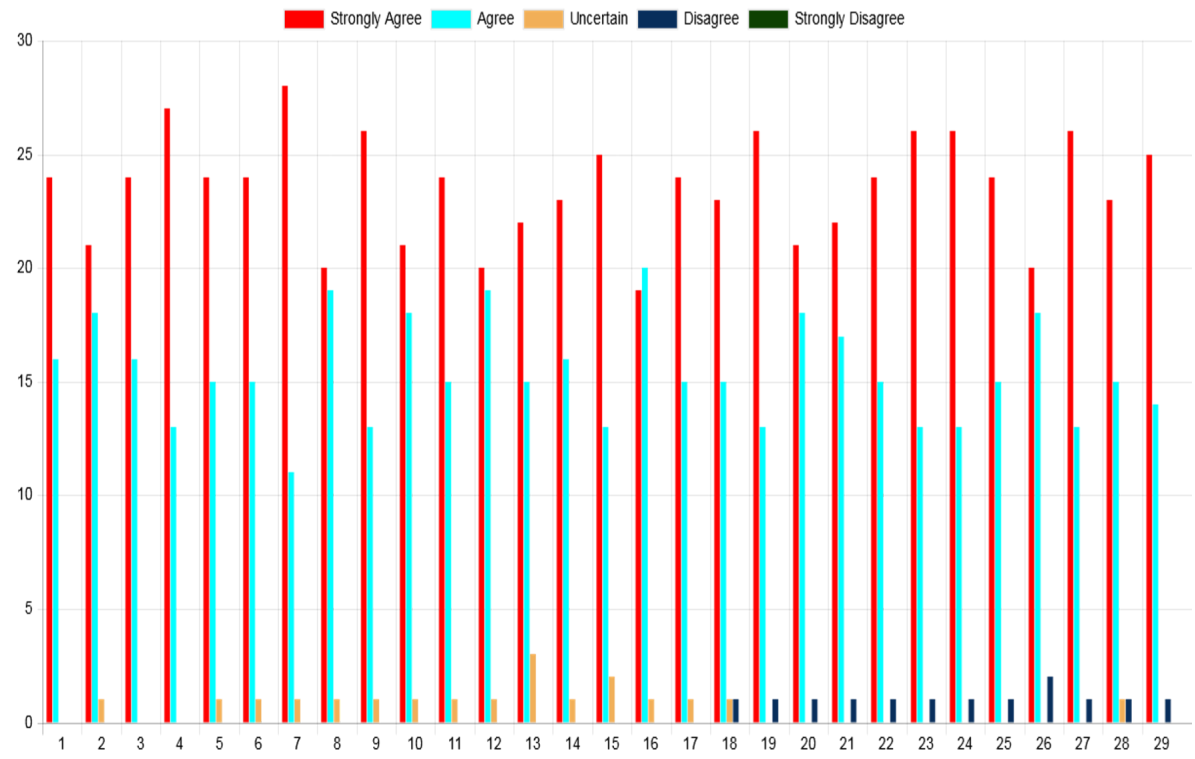
Teacher Name: Zia ur Rehman Mashwani

Course Name: Diversity of Plants

Section: A

Degree: BS(Botany)(Morning)

Semester# 1



General Comments of the Students about this Teacher

Weaknesses: Students indicated strong and satisfied opinion about the teacher

Strengths: The teacher gave many citations regarding current situation with reference to Pakistan. He showed reasonable manner and communication skill, confirmed participation of students in class discussion. Course was interesting and informative.

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Arid Agriculture University, Rawalpindi

PERFORMA 1

Teacher Evaluation

FALL-22

Session Name: FALL-22

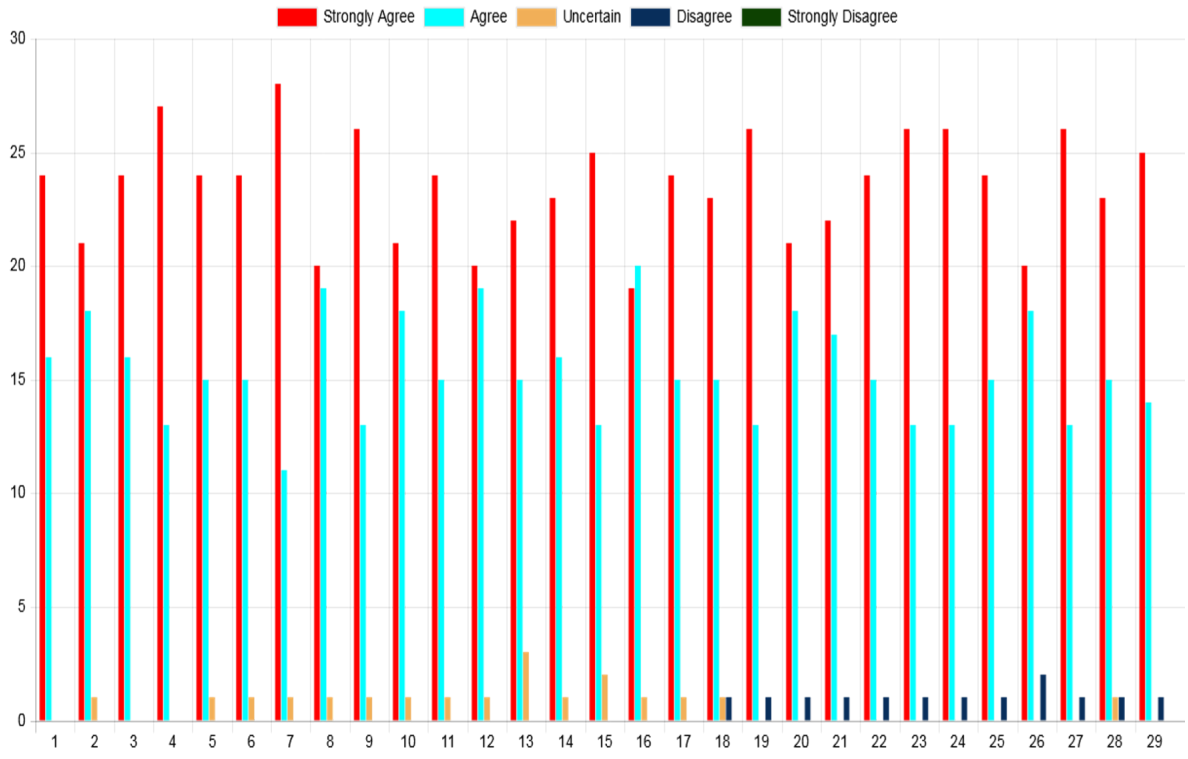
Teacher Name: Zia ur Rehman Mashwani

Course Name: Diversity of Plants

Section: A

Degree: BS(Botany)(Evening)

Semester# 1



General Comments of the Students about this Teacher

Weaknesses: The comments were satisfactory

Strengths: The tutor showed balanced attitude and communication skill. He was prepared for each class and was available for any time. Established participation of students in class discussion included recent updated materials.

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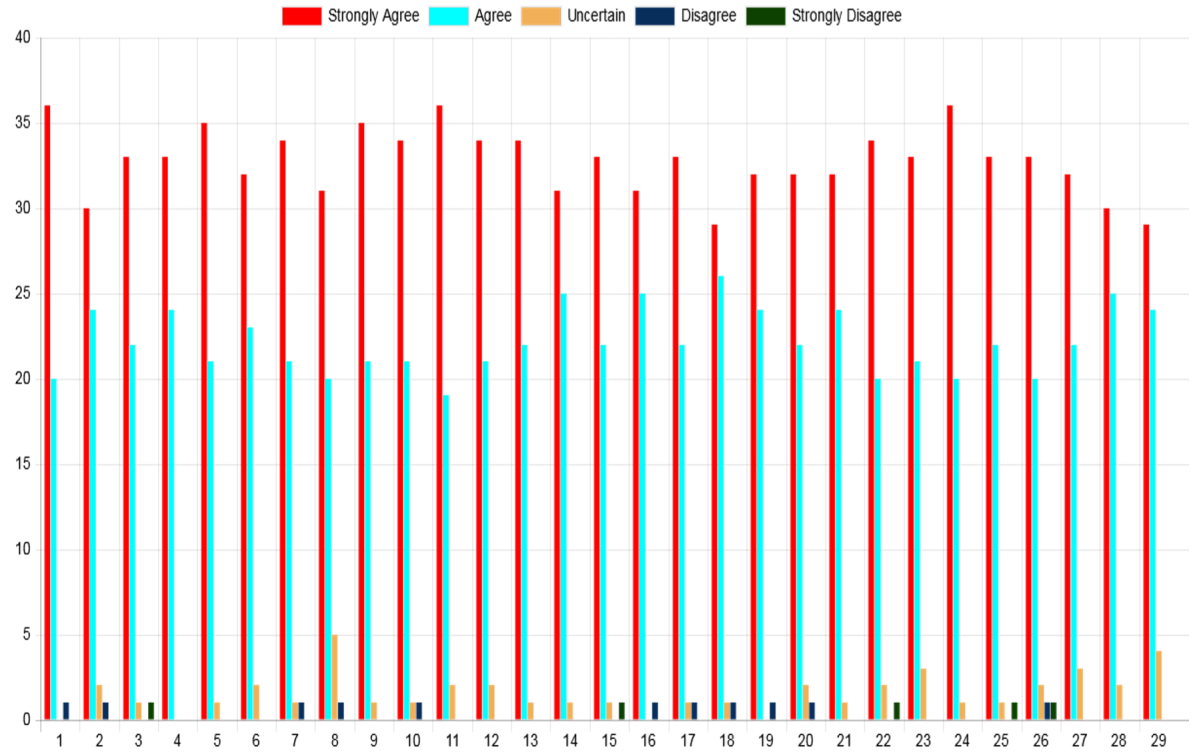
Arid Agriculture University, Rawalpindi

PERFORMA 1

Teacher Evaluation

Session Name: FALL-22 | Teacher Name: YAMIN BIBI | Course Name: Plant Diversity

Section: A | Degree: BS(Biology)(Morning) | Semester# 1



General Comments of the Students about this Teacher

Weaknesses: Instructor was more effective towards developing the interest of the students in thecourse material. Overall evaluation was good.

Strengths: Instructor was capable to communicate this course in a respectable routine with all characteristics of training and communication skill. All materials of the course were modern and updated.

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PERFORMA 1
Teacher Evaluation

FALL-22

Session Name: **FALL-22**

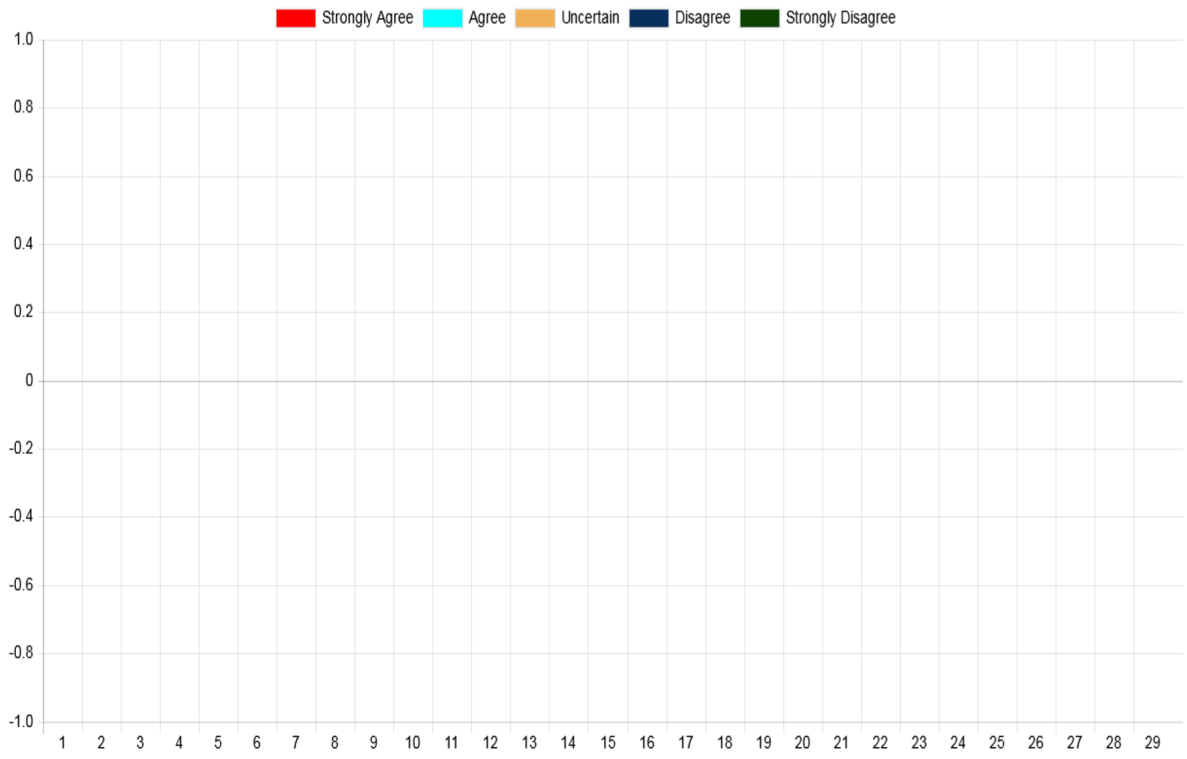
Teacher Name: **M. Naveed Iqbal**

Course Name: **Cell Biology, Genetics and Evolution**

Section: **A**

Degree: **BS-Botany (Evening)**

Semester# **3**



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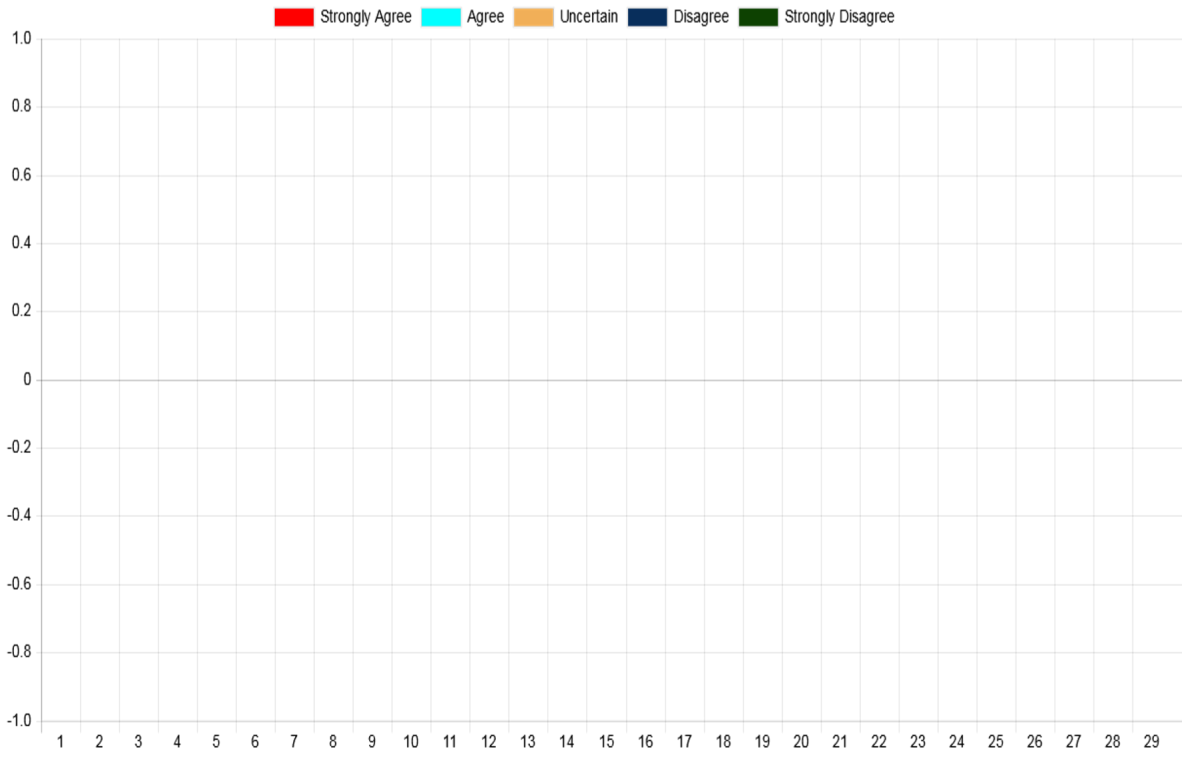
Pir Mehr Ali Shah
Arid Agriculture University, Rawalpindi
PERFORMA 1
Teacher Evaluation
FALL-22

Session Name: FALL-22
Teacher Name: M. Naveed Iqbal
Course Name: Cell Biology, Genetics and Evolution
Section: A
Degree: BS-Botany (Morning)
Semester# 3



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Performa2: FACULTY COURSE REVIEW REPORT

Course ode	Title	Credit value	Assessment Method/exam	No. of students	Comment on curriculum	Any change is course for future	Semester	% of student					Course instructor
								A	B	C	D	F	
Fall 2021													
ENG-301	English-1: Functional English	3(3-0)	Examination /Assignment	54	Fair	None	Fall2021	27.2	54.5	18.18	0	0	Hafiza Summaya Riaz/ Ms. Saba Aziz
SSH-301	Pakistan Studies	2(2-0)	Examination /Assignment	54	Fair	None	Fall2021	50	50	0	0	0	Mr. Said Faqeer Shah
MATH-301	Mathematics	3(3-0)	Examination /Assignment	54	Updated	None	Fall 2021	33	50	22	0	0	Ms. Isma Khan/ Ms. SidraBatool
ZOOL-311	Invertebrates Diversity	3(2-2)	Examination /Assignment	54	Updated	None	Fall2021	50	50	0	0	0	Dr. Abida Arshad
CHEM-311	Physical Chemistry	3(2-2)`	Examination /Assignment	54	Fair	None	Fall2021	20	50	20	10	0	Dr. Naheed Kaukab

BOT-311	Plant diversity	4(3-2)	Examination /Assignment	54	Fair	None	Fall2021						Dr. Zia ur Rehman Maheswani
TOQ-301	Translation of Quran	1(1-0)		54	Updated	None	Fall2021						Ms. Muzamil
Fall-2 022													
ENG-301	English-1: Functional English	3(3-0)	Examination /Assignment	62	Fair	None	Fall-2022	33	50	22	0	0	Dr. Isamil Abbasi
SSH-301	Pakistan Studies	2(2-0)	Examination /Assignment	62	Fair	None	Fall-2022	27.2	54.5	18.18	0	0	Dr. Zain ul Abedin
MATH-301	Mathematics	3(3-0)	Examination /Assignment	62	Updated	None	Fall-2022	50	50	0	0	0	Miss Arshama Khan
ZOOL-311	Invertebrates Diversity	3(2-2)	Examination /Assignment	62	Updated	None	Fall-2022	50	50	0	0	0	Dr. Ayesha Akram
CHEM-311	Physical Chemistry	3(2-2)`	Examination /Assignment	62	Fair	None	Fall-2022	33	50	22	0	0	Dr. Anam Zahid

BOT-301	Diversity of Pants	4(3-2)	Examination /Assignment	62	Fair	None	Fall-2022	50	50	0	0	0	Dr.Zia ur Rehman Maheshwani
TOQ-301	Translation of Quran	1(1-0)		62	Fair	None	Fall-2022	100	0	0	0	0	Dr. Syed Noor ul Hassan Hashmi
ENG-401	English-III: technical writing and presentation skill	3(3-0)	Examination /Assignment	54	Fair	None	Fall-2022	50	50	0	0	0	Miss Ayesha Hassan
CS-402	Introduction to Computing	3(2-2)	Examination /Assignment	54	Updated	None	Fall-2022	27.2	54.5	18.18	0	0	Mr. Waqas Ahmed
CHMEM-411	Organic Chemistry	3(2-2)	Examination /Assignment	54	Updated	None	Fall-2022	25	45	20	10	0	Dr. Saima Kalsoom
RSG- 303	Introduction to Geographic information System	3(2-2)	Examination /Assignment	54	Fair	None	Fall-2022	27.2	54.5	18.18	0	0	Mr. Waseem Ali malik

BOT-401	Cell biology, Genetics and Evolution	4(3-2)	Examination /Assignment	54	Fair	None	Fall-2022	50	50	0	0	0	Dr.Naveed Iqbal
TOQ-401	Translation of Quran –II	1(1-0)		54		None	Fall-2022	100	0	0	0	0	Mr. Adil Shah
Spring-2022													
SSH-303	Professional Ethics	3(3-0)	Examination /Assignment	54	Fair	None	Spring-2022	33	50	22	0	0	Miss Salma Shujeb akhtar
ENG-302	English-II: Communication Skill	3(3-0)	Examination /Assignment	54	Fair	None	Spring-2022	50	50	0	0	0	Dr. Isamil Abbasi
IS/ET-401	Islamic Studies/Ethics	2(2-0)	Examination /Assignment	54	Updated	None	Spring-2022	50	50	0	0	0	Dr. Syed Noor ul Hassan Hashmi
ZOOL-312	Chordates Diversity	3(2-2)	Examination /Assignment	54	Updated	None	Spring-2022	27.2	54.5	18.18	0	0	Dr. Muhammad Raees
CHEM-302	Inorganic Chemistry	3(2-2)	Examination /Assignment	54	Fair	None	Spring-2022	15	65	10	10	0	Dr. Naheed Kaukab

BOT-302	Plant Systematic Anatomy and Development / Embryology	4(3-2)	Examination /Assignment	54	Fair	None	Spring-2022	27.2	54.55	18.18	0	0	27.2

Proforma3: GRADUATING STUDENTS SURVEY.

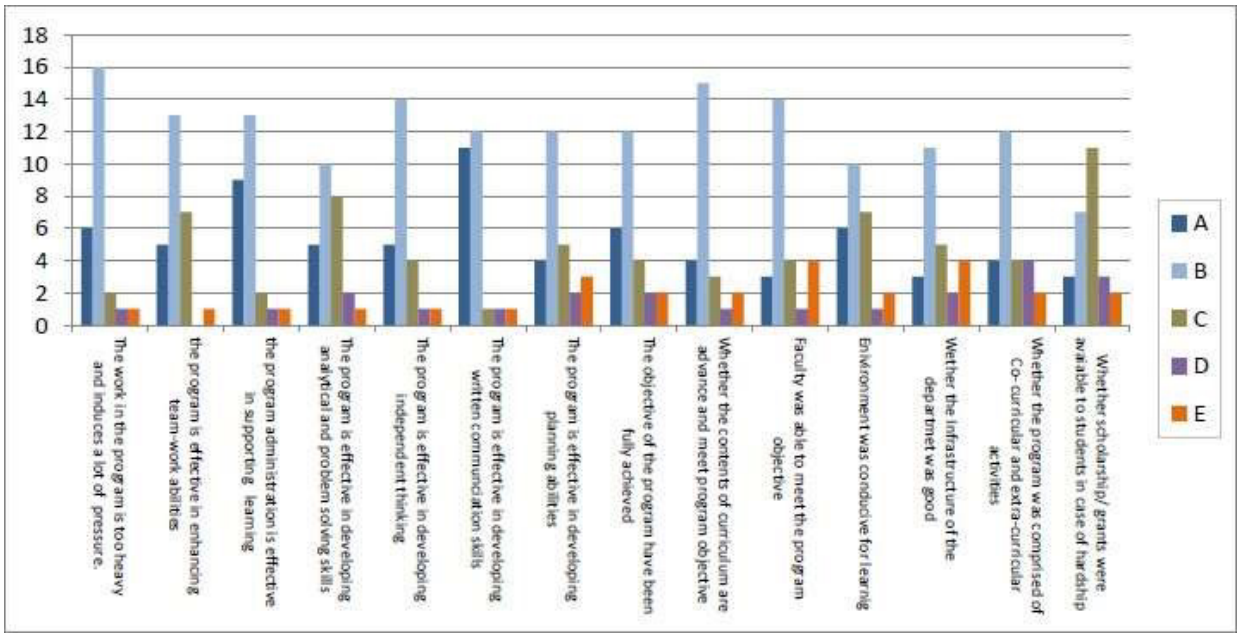
Review of graduating scholars was directed through Performa 3. Students demonstrated their high appraisal for program adequacy, for improving collaboration among the staff, support for learning, meeting goals of project and favorable environment for learning. Different parts of the system have like wise been appraised high.The results of the overview are given.

Best aspects of the Program:

- Program is conducive and improved learning skills.
- Understanding importance of Plants and biodiversity
- Enhanced writing skills

Aspects of Programin need of improvement:

Need of more research equipment in PGBL laboratory in accordance with various courses.



Proforma 5 : FACULTY SURVEY RESULTS

The consequences of personnel overview demonstrated that the greater part of the employees were satisfied with their level of scholarly endeavors. All the faculty members have a decent and respectable communication 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. Rahmat	Dr. Abida	Dr. Noshin	Dr. Naveed	Dr. Yamin	DrZia	Dr. Khafsa	Dr. Saira

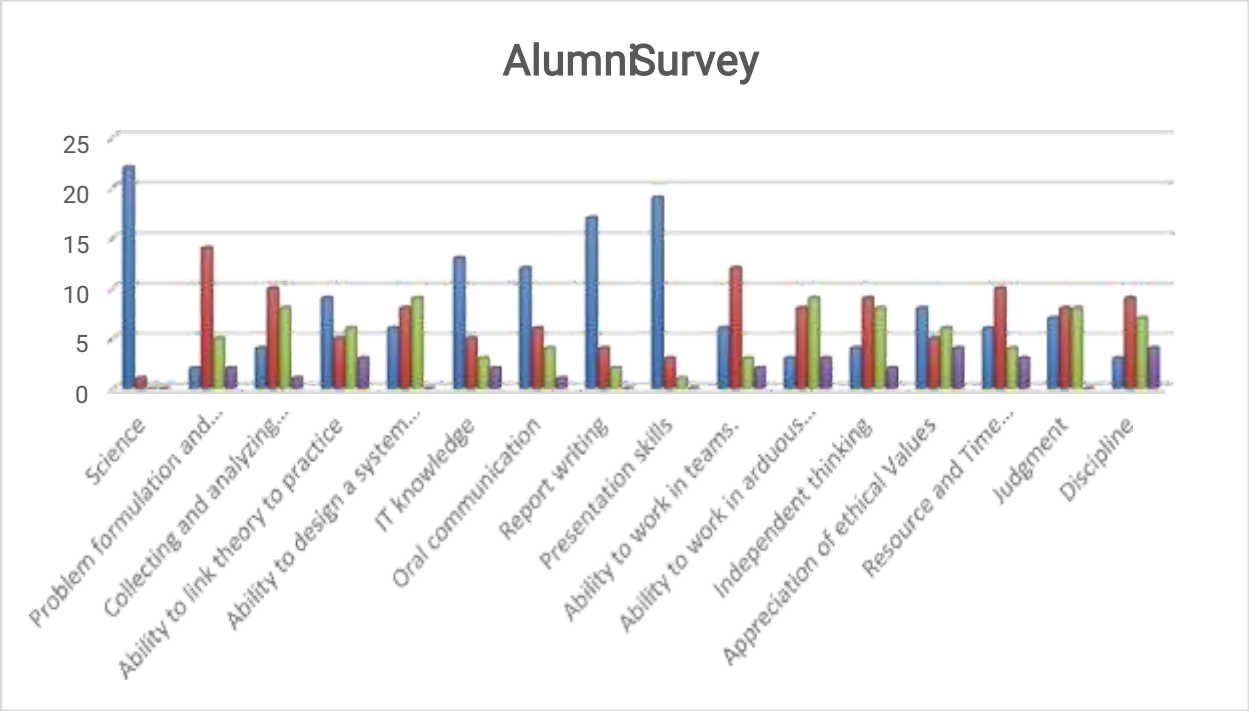
1.	Your mix of research ,teaching and community service	A	A	A	A	A	A	A	A
2.	The intellectual stimulation Of your work	A	B	A	A	A	B	A	C
3.	Type of teaching/ research you Currently do.	B	C	B	B	B	B	A	B
4.	Your interaction with students	A	B	A	A	B	A	A	B
5.	Cooperation you received from colleagues	B	A	B	A	B	A	A	A
6.	The mentoring available to you	A	A	B	A	A	A	B	B
7.	Administrative support from the department	A	B	A	B	B	A	A	B
8.	Providing clarity about the faculty promotion process	C	A	A	A	A	B	A	A

9.	Your prospects for advancement and progress through Ranks	A	A	A	B	A	B	A	B
10.	Salary and compensation Packages	B	A	A	B	A	B	A	A
11.	Job security and stability at the department	B	A	B	B	B	A	A	B
12.	Amount of time you have for yourself and Family	C	B	B	C	C	C	B	B
13.	The overall climate at the Department	B	A	B	A	A	A	A	A
14.	Whether the department is utilizing our experience and knowledge	A	B	A	A	B	A	A	A

Proforma7: **ALUMNI SURVEY RESULTS:**

Feedback of graduates in 2021 and 2022 was procured through Proforma-7. Greater part of the Alumni have appraised the opportunities of learning provided by department.Interpersonal aptitudes and administration/authority aptitudes have

additionally been appraised high.



Performa 08: EMPLOYER SURVEY

The rationale of this survey is to obtain employers input on the quality of education, the department is providing and to assess the quality of the academic program. The survey included University graduates employed in different organizations. All the employers

significantly favoured the excellent performance of the candidates as regards different aspects of the professional life like power of problem formulation and solving skills, and have great ability of oral communication and are reliable and morally sound. Employers showed a little apprehension about computer skills of the students.

Skill level%

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 ask ill to recognize plants upto species level.
- Knowledge of plant communities and ecological zoning will be improved.
- Understanding of morphological and physiological features of the plant flora will be improved.
- Students will be able to work as professionals.
- It will also build confidence to communicate and shall also develop the skill of effective writing.
- Students shall have an understanding of the impact of study of botany on environment.
- Basic skills and applied approach towards analytical techniques of the students will be improved.
- Students shall have an ability to use modern as well as conventional tools, skills and techniques necessary to conduct botanical research.
- Students shall learn to develop an insight for research design.
- Students shall have an understanding of professional and ethical responsibilities of a botanist.
- Student will surely know about flora of Pakistan, plant identification and ethnobotanical uses of local and exotic plants.
- Team work among the researchers will be ensured.

Strength of the Department

- University has many Accredited Programs.
- Collaborations with other universities and institutes for fulfilling the research requirements.
- Faculty members are fully qualified with specializations in their respective fields
- Labs are reasonably equipped.
- University's campus is friendly and safe.
- Ongoing research projects in different fields.
- University has significant impact on the regional community--educationally, economically, and culturally.

- University offers research based learning environment

Weaknesses Identified in the Program

1. There is alack of lectures halls.
2. University lacks sufficient financial support for faculty scholarship.
3. Thereis a need of short foreign trainingto faculty members
4. Latest literature and review are hardly available
5. Lack of Gas supply in Laboratories
6. As an integral part of the department, it must have
    - ➤ Departmental library
    - ➤ Greenhouse,
    - ➤ Herbarium & botanic garden
    - ➤ Computer Lab,

University has directionless research development and ineffective relationship with industry. University has inadequate resources for recruitment, retention and advising of students.

Major Feature of Improvement Plans

- To develop herbarium for confirm the identity of a plant or determine that it is new to science
- To establish herbarium and Botanic garden in order to aid the students by physically observing plants in preserved and live state.
- To establish computer Lab for students
- To develop departmental library.

Table3: Quantitative Assessment of the Department (Year2021-2022)

Sr.No.	Particular	No.	Remarks
1	BS. degree awarded	NA	In Progress
2	Technical:Notechnical ratio	2: 4	Fulfils HEC criteria
3	Average grade point	2:1	Fulfils 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).

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.

Table5: Degree requirements

Degree	Pre-requites
BS(Botany)	F.Sc.(Pre-Medical) with atleast 50% marks from a recognized institution,

SECTION 2

Criterion2: Curriculum Design and Organization

A. Title of Degree Program: BS. 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 numberof 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 four degree programs are organized by the department including BS, M.Sc, M.Phil and PhD

- **BS (Botany)**

The BS Botany Degree Program consists of 04 academic years / 08 semesters. As a whole a student has to study 20 Theory papers to total credit hours, out of this 04 Marks are assigned for evaluation through assignments, test and exercises by the concerned teacher and the remaining marks for mid and final 56 as per university examination rules. Degrees are awarded after completing the required number of credit hours (courses) following by Comprehensive Examination. 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.

Table6: Courses

S. No.	Course	Title	Credit
Minor Courses			
1	ENG-301	English-I Functional English	3(3-0)
2	SSH-301	Pakistan Studies	2(2-0)
3	MATH-301	Mathematics	3(3-0)
4	ZOOL-311	Invertebrates Diversity	3(2-2)
5	CHEM-301	Physical Chemistry	3(2-2)
6	TOQ-401	Translation of Quran –II	1(1-0)
7	TOQ	Translation Of Quran	1(1-0)
8	SSH-303	Professional Ethics	3(3-0)
9	ENG-302	English-II Communication Skills	3(3-0)
10	IS/ET-401	Islamic Studies/Ethics	2(2-0)
11	ZOOL-312	Chordates Diversity	3(2-2)
12	CHEM-302	Inorganic Chemistry	3(2-2)
13	RSG-303	Introduction to geographic information system	3(2-2)
14	ENG-401	English-III Technical Writing and presentation skills	3(3-0)
15	CS-402	Introduction to computing	3(2-2)
16	CHEM-411	Organic Chemistry	3(2-2)
Core Courses			
17	BOT-302	Plants Systematics, Anatomy And Development/Embryology	4(3-2)
18	BOT-401	Cell biology, Genetics and Evolution	4(3-2)
19	BOT-311	Plants Diversity	3(2-2)
All courses offered for BS Programs can be offered to the M.Phil students, depending upon their requirements			

Curriculum course requirement for BS degree is summarized in the following table, whereas, their detailed description is also provided at end of report.

Standard2.1: Assessment of the Curriculum of Botany Department

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

MeetingStandard 2.1: Courses versus Program Outcomes

Table 7: Course vs. Program Outcome

	OUTCOMES			
COURSE	1	2	3	4
ENG-301	***	** *	**	** *
SSH-301	***	**	***	**
MATH-301	***	** *	**	***
ZOOL-311	**	**	***	** *
CHEM-301	**	** *	**	** *
TOQ-401	***	** *	** *	**
TOQ	**	***	**	***
SSH-303	** *	** *	**	** *
ENG-302	***	** *	**	**
IS/ET-401	***	** *	**	**
ZOOL-312	** *	***	** *	***
CHEM-302	**	** *	***	***
RSG-303	***	** *	***	***
ENG-401	**	**	** *	**
CS-402	** *	***	**	** *
CHEM-411	***	**	** *	**
BOT-302	** *	***	** *	**
BOT-401	**	**	** *	** *
BOT-311	***	** *	**	**

* = Relevant

** =Relevant and satisfactory

***= Very relevant and satisfactory

- The curriculum fits well and satisfies the core requirements for the program, as specified by 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	ENG-301, CHEM-411, ZOOL-311, CHEM-301, TOQ-401, TOQ, SSH-303, ZOOL-312, ENG-302, IS/ET-401, CHEM-302, RSG-303, ENG-401, CS-402, BOT-302, BOT-401, BOT-311
Solution designs	MATH-301 ,SSH-301

Standard 2-3

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

Standard 2-4

The curriculum meets major requirements as approved by HEC.

Standard 2-5

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

Standard 2-6

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 is one Laboratory for BS Program in the department. The facilities and short comings of laboratory are listed as under.

LAB -1

Laboratory title	*Post Graduate BotanyLab* (for BS students)
Location and Area	Faculty of Sciences, Department of Botany, 2nd floor, New Academic Block.
Objectives	Laboratory is used for ➤ Laboratory is spacious and adequate for research and teaching. ➤ Research work for the graduate and post graduate students. ➤ Practical exercise and demonstration to master students in the introductory and major courses.
Major apparatus viz equipments	Laboratory is equipped with basic apparatus and reagents. These include Hotplate, EC meter, weighing balance, pH meter, microscopes, slides, Electric balance,etc.
Safely Regulations	Minor hazards and accidents, injuries (First Aid Kit), safely measures are Unavailable against fire (extinguisher). Though the university maintains a Medical Dispensary for such incidents.

Standard 3-1: Laboratory Manuals:

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

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:

- IT issues, virus problems, telephonesets/ connections?
- Majority of the faculty members do not have access to the PCs as department have only one Computer provided by the university.
- Not availabilityof 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:

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

Standard 4-1: Frequency of courses

- Courses are taught as per approved scheme of study.

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.

Practical's aspects are covered by performing experiments in Labs and fields. In order to update students about the latest developments in study are a visits to various research organization are as 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.

SECTION 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:
- BS. (F.Sc Pre-Medical with at least 50%Marks)
- 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, some procedure exists for retaining highly qualified faculty members.
- HEC also supports appointment of highly qualified members as foreign faculty professor, National Professors and deputes 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 byover heads,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 6-1: Full Time Faculty

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.
- Faculty is encourage in various development program of the university

Faculty member motivation

- There is a calamitous necessityof motivation

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	4	2	2
Ecology	4	1	1
Physiology	3	1	1
Mycology and Plant Pathology	1	1	1
Tissue Culture	3	2	2
Total	15	7	7

Table 9: Faculty Specialization

S. No	Name	Position	Qualification	Specialization
1.	Dr. Abida Akram	Professor	Ph.D	Mycologist
2.	Dr. Rahmatullah Qureshi	Professor	PhD	Plant Taxonomy&
				Ethnobotany
3.	Dr. Noshin Ilyas	Assist Professor	PhD	Plant Microbiologist
4.	Dr. Naveed Iqbal Raja	Assist Professor	PhD	Tissue culture
5.	Dr.Yamin Bibi	Assist Professor	PhD	Phytochemistry
6.	Dr. Zia Ur Rehman Mashwani	Assist Professor	Ph.D	Ethno pharmacology
7.	Dr. Khafsa Malik	Assist Professor	Ph.D	Biosystematics and Biodiversity
8.	Dr. Saira Asif	Assist Professor	Ph.D	Tissue Culture

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.
- 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 necessityof motivation.

SECTION 7

Criterion 7: Institutional Facilities

Standard 7-1 infra structure

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

- The department has lack of departmental library.
- Lab of the dept. 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.
- Up turn 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 ClassRoom and Faculty Offices

- Faculty offices are inadequate.
- Shortage of lecture halls

SECTION 8

Criterion 8: InstitutionalSupport

- There is one classroom available therefore; classes are taken in the labs.
- There should be more encouragement for the faculty members to carryout quality research.
- There is inadequate supporting technical and official staff and some equipment.

Standard 8-1 Support and Financial Resources

At present department is having 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 tothe 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:

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

Standard 8-2 High Quality Graduate Students and Research scholars

Graduate students are enrolled once in a year. Lately, details of the students and research scholars are given following tables.

Table 12: Showing the Number of students obtaining degree in BS. Programs from 2021-22.

STUDENTS	No.	
BS(Botany)	2021	2022
Spring+Fall(Morning+Evening)	54	111

Standard 8-3 Financial Resources:

Total budget of the department for the financial year 2021-22 is Rs. 55000/- (Fifty thousand rupees only) which hardly fulfills the departmental needs particularly for the purchase of necessary chemicals, etc.

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Proforma9 FacultyResume

Name	**Prof.Dr. AbidaAkram**
Personal	**CNICNo**: 37405-2924797-2 **OfficePhone**:92-051-9292117 **CellNo.** 92-333-5320262 **E-mail**: abidauaar@hotmail.com abidaakram@uaar.edu.pkabidauaar@gmail.co m **Address**: DepartmentofBotany, PirMehrAli Shah, AridAgricultureUniversity, Rawalpindi
Courses taught	**B.Sc(Hons)** • GeneralBotany. • PlantEcology • PlantPhysiology **BS (Forestry)** • GeneralBiology-1 • GeneralBiology-II **M.ScBotany** • Morphology of Non-Vascularplants,Bacteria andVirus • Environmental Pollution • Plant Physiology • Arid Zone Ecology • Economic Botany • Forensic Botany • Mycology and Plant

	Pathology • Plant Microbe Interactions **M.ScBiology** • Environmental Biology • Biodiversity • Mycology and Plant Pathology **M.Phil./Ph.DBotany&Biology** • Plant Microbe Interaction • Forensic Botany **M.B.A(Agri-business)**

M. Phil thesis supervised	• RoleofPlantbasedNanoparticlesonGrowthofWheat under Biotic Stresș • EvaluationofGreenSynthesizedSilverNanoparticleson Disease incidence Against Canker in Mandariņ • Integratedimpactofoilseedcakesandbiocontrolagents for management oț • RootKnotNematodeș • AflatoxincontaminationinBarleyanditsproductș. • Assessment of Aflatoxin in Wheat and its Associated productș • Pathological evaluation of secondary metabolites produced by Fusarium sp. isolated from Sesameț. • Impact of some abiotic factors on*in vitro* development of Alternaria sp. Isolated from Sesameț • Establishment of an efficient protocol for plantlet's regeneration via direct and indirect organogenesis in *Vitis vinifera* Ļ. • Pathological evaluation of secondary metabolites produced by Alternaria sp. isolated from Sesameț • Study of some mushrooms collected from Islamabad for their antioxidant activity • Histopathological studies of sesame seedlings infected witḥ *Alternaria* spp. • *In vitro* evaluationof different bio-agents against *Sclerotium rolfsii* Saccț.

	• Soil mycoflora of Bhoman Batth Tehsil Wazirabad, Gujranwala. • Assessmentof antifungal efficacy of selected spices against *Aspergillus* spp. • Prevalence of fungal contamination in various drinking water
	sources. Histopathological studies of chickpea seedling infected with *Sclerotium rolfsii* Mycoflora associated with seeds of Sesame(*Sesamum indicum* L.) from Sialkot and its management Molecular characterization of fungal isolates and afllatoxins contamination in chickpea flour Evaluation of*Pongamia pinnata* products against the *Sclerotium rolfsi i* extracted from chickpea.
	Histo pathological studies of chickpea seedling infected with*Fusarium* 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 Sclerotium *rolfsii* Sacc.isolated from chickpea Screening of Pothwar region grasses for their allelopathic effect

	▯ Evaluation of intraspecific relationship of *Solanum melongenna* L. and *Lycopersicon esculantum* Miller basedon 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 Alternaria and Fusarium spp., their pathogenesis and Pathogenesis related proteins with Sesame (*Sesame indicum* L.) • Integrated management of myco toxins in Red chilli. • Exploration of mechanism of action of *Aspergillus* and *Fusarium* spp. in Sesame. • Isolation and characterization of toxigenic and atoxigenic strains of *Aspergillus flavus* in maize. • QTL Mapping of *Aspergillus flavus* resistance in Chilli (*Capsicum annum*).
Ph.Dthesisco-supervised	Nil
Publications(Nonimpact 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 *Sesamum indicum* L. Sc., Tech. and Dev. 35 (4): 171-178. • Sultana,K.,M.I.Bhatti,**A.Akram**,G.Irshad,M.I.Mastoiand M. Jiskani. 2015. Check list of mushrooms Asco. And Gasteromycetes of Kaghan Valley III. Sci.Int. (Lahore), 27(6),

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	To the synergistic & growth regulations. AsianJ.PlantSci. 2(13): 974-977. ▯ Asghar,R**.,**M.Ahmad**,**M. Zafar**,A.Akram,**J.Mahmoodand M. Hassan. 2003. Antibacterial efficiency of *Acacia modesta* 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 descriptionand 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 RachnaDoab.Pak.JournalBiol.Sci.2(4):1355-1357.
ResearchInterest	Mycology & Plant Pathology Morphological & Genetic variabilityin Fungi Mycoflora and Mycotoxins Management Characterization of Oyster mushrooms Fungal Secondary Metabolites Anti microbial activity of Plants& Bio agents
Impactfactor Publications	Laala, G., M. U. Raja, S. R. A. Gardezi, G. Irshad, **A. Akram** and I. Bodlah. 2019. Study ofmacrofungi belonging to order agaricales of Poonch District Azad Jammu andKashmir (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 (*Sesamum indicum* L.) seeds from the Punjab, Pakistan Physiological and Molecular Plant Pathology (102) 128-135. **Impact Factor1.395** **Akram, A.,** P.Amber, S. M. Iqbal, R. Qureshi, A. Javed, S. Mukhtar. 2017. RAPD based characterization of chickpea isolates of *Sclerotium rolfsii*. Pak. J. Bot., 49(5): 2015-2022. **Impact. Factor 0.69**

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DR. RAHMAT ULLAH QURESHI

RESEARCH THESIS SUPERVIS	A. Ph.D. Thesis Supervised (Major supervisor)			
	S. No.	Name	Year	Title of thesis

ED	1	Ms. Mubashrah Munir HEC Indigenous	2014	Ecology of Algal Flora from Kallar Kahar Lake and its tributaries

	Scholar		
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 *Leptadeniapyrotechnica*
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 Bio diversity Conservation.
6	Muhammad Maqsood	2017	Cytotoxic and phytochemical analysis of selected medicinal plants from Salt Range, Pakistan. Department of Botany, PMAS-Arid Agriculture University, Rawalpindi (Supervisor).
7	Mirza Faisal Qaseem	2018	Physio-molecular evaluation of some exotic wheat lines under drought and heat stress. Department of Botany, PMAS Arid Agriculture University, Rawalpindi

12	Shahid Ali	2022	Floristic diversity, phytosociology and quantitative ethnobotanical enumeration of District Chakwal, Department of Botany, PMAS-Arid Agriculture University, Rawalpindi (Supervisor)

B. PhD Thesis Supervised (Member)

S. No.	Name	Year	Title of thesis
13	Fakhira Shamim	2013	Relative physiological & biochemical evaluation of some tomato (Lycopersicon esculentum L.) genotypes under water deficit conditions.
14	Pervaiz Anwar	2014	Bio chemical analysis of oil extracted from wildolive (*Oleaferruginea*) and its comparison with standard oil of Cultivated olive (*Oleaeuropea*)
15	Khalid Mehmood (03- arid-827)	2014	Improvement of wheat for drought Tolerance through Genetic Engineering
16	Ms. Sammar Fatima (02-arid - 281)	2014	Drought stress induced metabolic changes in local cultivar of wheat (*Triticumaestivum* L.)
17	Rehana Kauser	2015	Morphological and biochemical Adaptations of local cultivar of barley (*Hordeumvulgare* L.) under drought
18	Mr. Safdar Ali	2015	Weed population dynamics and wheat

		(11-arid-06)		productivity under different tillage Systems in Pothwar	
19	Ms. Sangam Khalil (05-arid-334)	2015	Habitat preference and breeding biology of grey partridge (*Francolinus pondicerianus*) in salt range, Punjab		

20	Ms. Asma Ahmed	2015	Phytochemica analysis of selected medicinal plants for antidiabetic compounds
21	Shaista Akhund	2016	Integrated management of mycotoxins red chilies.
22	Mehmood-ul-Hassan	2016	Impact of cropping and tillage systems on weeds and wheat yield.
23	Sobia Khadam	2016	Analysis of Carica papaya and assessment of its impact of liver enzymes and hematological profile in mice.
24	Muhammad Shoaib Amjad	2017	Ecological evaluation of vegetation structure and diversity in District Kotli Azad Jammu and Kashmir, Pakistan.
25	Touseef Anwar	2018	Allelopathic of selected weeds of wheat crop under rainfed conditions.
26	Muhammad Faraz Khan	2019	Ethnobotanical and biological screening of selected medicinal plants of Sudhanoti, Azad Kashmir.
27	Zafar Iqbal	2020	Biosystematics of Coccinellidae (Coleoptera) from Northern Pakistan. Department of Entomology, PMAS-Arid Agriculture University, Rawalpindi
28	Rukhsana Afzal	2022	Isolation and characterization of oyster mushroom from hilly areas of SubHimalayan Range.

29	Rahmat Wali	2022	Ethnopharmacological valuation of medicinal plants of fairy meadows and surrounding valleys, Gilgit Baltistan,
			Pakistan
30	Wajiha Seerat	2022	Characterization of toxigenic and atoxigenic strains of Aspergillus flavus in maize.

C. M.Phil. Thesis Supervised (Major Supervisor)

D.Co-supervisor

S.No	Name	Year Of Passing	Title of Thesis
1	Maliha Khanum.	2009	Survey of economically important plant species of University Research Farm at Koont
2	Noureen Fatima	2009	Effect of different post-harvest treatments on storage life of Capsicum annuum L.
3	Noureen Ashraf	2009	Antimicrobial activity of Hippophae rhamnoides L.
4	Shahid Mehboob	2009	Phytosociology of Lehtrar valley, Kottli Satian, District Rawalpindi.
5	Rabia Nazar	2010	Invasive species of Tehsil Kallar Kahar, District Chakwal.
6	Ghazala Nasreen	2010	Taxonomy of Eclipta prostrata from Pakistan.
7	Sidra Raana	2010	Taxonomic revision of Gnaphalium and Conyza from Pakistan.
8	Amna	2010	Taxonomic revision of Medicago spp. from Pakistan.
9	Tahira Batool	2010	Ethnobotany of Bochhal and Miani villages, Tehsil Kallar Kahar, District Chakwal.
10	Iram Zahra	2010	Floral Diversity of Santh Saroola and its neighboring areas of Tehsil Kotli Sattian, Rawalpindi.
11	Rehana Kousar	2010	Antimicrobial activity of Fagonia indica from Thal Desert Punjab.

12	Kh. Shafiq Ahmad	2010	Ethnobotany of Sharda and its allied areas (Neelum Valley), Azad Jammu and

			Kashmir.
13	Humaira Shaheen	2010	Ethnotaxonomy of Santh Saroola and its neighboring areas of Tehsil Kotli Sattian, Rawalpindi.
14	Gul-e-Raana	2011	Screening and evaluation of Euphorbia spp. for grassy weed management.
15	Muhammad Maqsood	2011	Ethnobotanical investigation of arid lands of district Khushab.
16	Asmatullah	2011	Ethnobotanical evaluation of Frontier region Tank, KPK.
17	Wasim Ahmed	2011	Phytosociological and ethnobotanical aspects of Batnara and Simbar villages of district Abbottabad.
18	Farkhanda Jabeen	2011	Estimation of genetic diversity of Nigella sativa through morphological and molecular techniques.
19	Sarah Majeed	2011.	Allelopathic effects of Chenopodium ambrosioides and Conyza canadensis from Potohar region.
20	Munazza Shahzad	2011	Antibacterial and antioxidant activities of Moringa oleifera from Thal desert, Pakistan.
21	Abida Rasheed	2011	Allelopathic appraisal of Ailanthus altissima for the control of broad and narrow leaved weeds.
22	Asma Hanif	2011	In Vitro assessment of Moringa oleifera against some pathogenic

			fungi.
23	Simeen Masood	2012	Ecotaxonomic study of cyanophyta of Kallar Kahar Lake.
24	Rukhsana Kosar	2012	Weed flora composition of wheat crop in Tehsil Gujrat, Pakistan.

25	Memoona Akram	2012	Weed flora dynamics of maize crop in Tehsil Gujrat, Pakistan.
26	Shahida Perveen	2012	Antimicrobial activity of Cymbopogon jwarancusa from Thal Desert.
27	Abida Hussain	2012	Ethnobotanical study of Rawalakot, AJK.
28	Sehrish Sadia	2012	Allelopathic potential of Tagetes minuta for controlling broad and narrow leaved weeds.
29	Mirza Faisal Qaseem	2013	Folk wisdom of plants used by the rural communities of Kotli, Azad Jammu and Kashmir.
30	Kaleem Ullah	2013	Floristic and ethnobotanical investigations of Monocotyledons from Thal Desert.
31	Sadaf Anwaar	2013	In vitro anthelmintic activity of native medicinal plants from Thal Desert.
32	Abdullah Rahim	2014	Ethnobotanical profileof district Battagram, KPK
33	Saima Sharif	2014	Ethnobotanical Enumeration of Tehsil Bagh, AJK

34	Anam Ifthikhar	2015	Micro-propagation and antioxidant activity of Solanum villosum
35	Sajid Safeer	2015	Floristic bioecology of Mahasheer National Park, AJK
36	Muhammad Imran	2015	Botanic wisdom of thesil Balakot, KPK
37	Farhan	2015	Vegetation analysis of Range lands of Anwar District Bakhar (Punjab), Pakistan
38	Nadia Kalid	2016	Floral diversity of Tehsil Dhirkot, District Bagh AJK.

39	Aqsa Ashfaq	2016	Antifungal activity of selected medicinal plant diffusates against Colletotrichum gloeosporioides.
40	Saiba Idrees	2016	Antifungal activity of selected medicinal plant extracts against Fusarium oxysporum f.sp. lentis.
41	Sana Shakeel	2017	Phytochemical analysis and antioxidant activity of Corchorus depressus.
42	Muhammad Mursalin	2018	Population dynamics of medicinal plants of Zhandrai, Dir Kohistan.
43	Maria Ahmed	2018	Formulation and biological evaluation of chicory compound.
44	Iqra Yasmin	2018	.Comparative antioxidant activity of medicinal plants used in Bazoori formulation.
45	Shahab	2018	Nutraceutical potential of melon seeds.
46	Shazmeen	2018	Antimicrobial activity and phytochemical evaluation of Cichorium intybus.

47	Sania Wahid	2019	Nutraceutical potential of Moringa oleifera from Pakistan.
48	Lubna Ijaz	2019	Botanical demography, flowering phenology and life form of National Agriculture Research Centre, Islamabad.
49	Tehseena Jamil	2019	Floristic composition and biological spectra of Mountain Zindapir, Hassan Abdal, Punjab, Pakistan.
50	Mirza Afzal Baig	2019	Population dynamics and distribution of Saussurea costus (Falc.) Lipsch. from Azad Jammu & Kashmir, Pakistan.
51	Syed Sabir Hussain	2020	Distribution pattern of rare and threatened plant species using G.I.S. mapping from

	Shah		Kotli, AJK.
52	Tahira Javaid	2020	Green synthesis of silver nanoparticle from Trichodesma indicum and its pharmacognostic potential.

S. No.	Name	Year of Passing	Titleoftheses
39	Sabith Rehman	2015	Ethnobotanical of North evaluation Waziristan Agency

LeadGuest Editor	Evidence Based-Complimentary and Alternative Medicine, Hindawi publishers(USA).
Co-Editor	PakistanJournalofWeedScienceResearch(HECRecognized)
TECHNICAL REFEREE	1. PakistanJournalforScientific&IndustrialResearch 2. PakistanJournalof Agriculture 3. PakistanJournalofPharmaceutical Sciences 4. JournalofAnimalandPlantsSciences 5. PakistanJournalofPharmaceutical Sciences 6. Journal of Ethnobiology& Ethnomedicine 7. BMC Complementary and Alternatives Medicine 8. Journalof Medicinal Plants Research 9. African Journal of Pharmacy& Pharmacology 10. Mountain Research & Development 11. Journal of Ethnopharmacology 12. PharmaceuticalBiology 13. African Journal of Traditional, Complementary and Alternative medicines 14. InternationalJournalof EconomicandEnvironmentalGeology
Consultanci	´ Environmental Impact Assessment for Seismic operation in East

es	. Qadan Wari gas field (Nara Desert) with reference to the vegetation. 2001. Hagler Bailey Pakistan (Pvt.) Limited, Islamabad. Environmental Impact Assessment for Seismic operation in GamabtBlock with reference to the vegetation. 2001. Halcrow Pakistan (Pvt.) Limited, Islamabad. Environment Impact Assessment Study of Sawan Wari (Nara Desert) for OMVGasCompanywithreferencetothevegetation.2001.HaglerBailey Pakistan (Pvt.) Limited, Islamabad.
Resource Person/Guest Speaker	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. 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. 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. 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. 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, Universityof Karachi, , dated 27 to 15 to 18th January, 2016.
	73 Deliveredaninvitedtalkon **"Phytodiversityandconservation issues:A case study from the Nara Desert, Pakistan"** in the 2nd International Symposium On Biodiversityof Pakistan: Prospects and Associated Issues organized by Department of Botany University of Peshawar at Baragali Summer Campus Abbotabad dated May 22-24, 2016
SEMINAR/ CONFERENCES/ SYMPOSIA ATTENDED	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. International Seminar on "Research in Pharmacy: Opportuniyties for PhramaciststoContributeinHealthcareSystem,FacultyofPharmacy,
	Universityof Baluchistan, Quetta, 1st June, 2015,SerenaHotel,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, HaiglerBaily 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 InternationalSymposiumOnBiodiversityofPakistan:Prospectsand Associated Issues organized by Department of Botany University of Peshawar at BaragaliSummer CampusAbbotabad datedMay22-24, 2016

PUBLICATIONS	INTERNATIONAL (ImpactFactored)

1. Ali, S., M.A. Malik, M. Ansar, G. Qadir and **R. Qureshi**. 2016. Seed bank density and weed flora dynamics of *Convolvulus arvensis* as affected by different tillage systems in rainfed wheat (*Triticum aestivum*). *Int. J. Agric. & Biol.,* 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 *Leptadenia pyrotechnica* (Forssk.) Decne.: A review*Afr. J.Tradit. Complement.Altern.Med.* ,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. *Evidence-Based Complementary and Alternative Medicine* , 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 (*Psidium guajava* L.).*Pak. J. Bot* ., 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 (*Triticum aestivum* L.).*Pak. J. Bot* ., 48(1): 331-337 (**Impact Factor: 0.822)**.
6. Munir, M., **R. Qureshi,** M. Ilyas, M. Munazirand M.K. Leghari. 2016. Systematics of*Chroococcus* from Pakistan.*Pak. J. Bot* ., 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. *Pak. J. Bot*., 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.,RQureshi,M.Ikram,S.Ali,M.Rafi,J.A.KhanandM. 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 diversityof 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:AnewrecordfromPakistan.PlantBiosystems,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 [77] 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.
    Floraof Lal Suhanra NationalPark, Bahawalpur, Punjab,Pakistan. *Pak. J.Bot* .,46(4):1331-1341 (**ImpactFactor: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**).

    Gulfraz, M., D. Ahamd, M.S. Ahmad, **R. Qureshi,** R.T. Mahmood, N. JabeenandK.S.Abbasi.2014.Effectofleafextractsof*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. Inventoryof 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-ImpactFactoredPapers)

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.) establishmentunderdifferenttillagesystemsinPothwar. *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 (*Triticumaestivum* 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. 79 http://www.actahort.org/books/1023/1023_37.htm

31. **Qureshi, R.,** M.Khanum, H.ShaheenandM.Munir.2014.Medicinal plants of Koont research farm, Pir Mehr Ali Shah Arid Agriculture University Rawalpindi, Pakistan. Indian J. Nat. Prod. Resour., 5(3):

	23. 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*ArchivesDesSciences,* 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.

BOOKCHAPTER/RESAERCHSUMMARYPUBLISHED

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:**978-9698040-28-4).

37. **Qureshi, R.** 2014. Floral Diversity, Threats and ConservationMeasures: 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 DEPARTMENTOFBOTANY PMASARIDAGRICULTUREUNIVERSITY,MURREE ROAD, RAWALPINDI PAKISTAN. E.Mail:noshinilyas@yahoo.com, noshinilyas@uaar.edu.pk Contactno.092-333-5310587(Cell) 092-51-5418017 (landline)
Coursestaught	• Plant Proteomics • Stress Physiology • PhysiologyandGeneticsofBNF
	Plant Physiology EnvironmentalPollution Plant Anatomy Physiologyand Genetics of Biological Nitrogen Fixation

	29. Contribution of nitrogen fixed by *Vigna radiate* L. to preceding wheat crop 30. Effect of *Azospirillum* Inoculation on Maize Under Drought Stress 31. Effect of exogenous application of Glycine betaine on drought stress tolerance potential of Sunflower
	2. Fertigation efficacy of municipal waste water for leafyvegetables 3. Amelioration of heavy metal stress by inoculation with tolerant PGPRs and Biochar 4. Bioremediation of Crude Oil contaminated Soilwith PGPR and Biochar for Sustainable Production of Maize 5. Effect of bioorganic fertilizer containing PGPR prepared from waste protein on maize). 6. Testing the potential ofwaste water from olive oil mill wastefor improvement of growth of wheat crop 7. Amelioration of drought stress by silicon and biofertilizer 8. Physiological attributes of salt tolerance in wheat mapping population

Ph.Dthesisco-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 Treatmentfor Polychlorinated Biphenyly (PCB) and Chromium in tannery waste water **(Muhammad Wahab Yasir Thesis submitted in 2019)**
Publications (Nonimpact 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(TriticumaestivumL.)*AmericanJournalofPlant Sciences ,7* (06),806.

Research Interest	• Plant microbe interaction under abiotic stress. • Physiological,biochemical land molecular mechanism of abiotic stress tolerance in plants.

Impact factor Publications	**ImpactFactorPublication** 1. The potential of *Bacillus subtilis* and phosphorus in improving the growth of wheat under chromium stress. **2022** Journals of Applied Microbiology http://doi.org/10.1111/jam.15676 **(IF. 4.059)** 2. Advances in Biochar and PGPR engineering system for hydrocarbon degradation: A promising strategy for environmental remediation(**2022)** Environmental Pollution https://doi.org/10.1016/j.envpol.2022.119282 **(IF. 8.07)** 3. Designing of pretreatment filter technique for reduction of phenolic constituents from olivemill wastewater and testing its impact on wheat germination(**2022)** Chemosphere **(IF. 7.08**) 4. Improvement of Plant Responses by Nanobiofertilizer: A Step towards Sustainable Agriculture (**2022)** Nanomaterials *12* , 965. https://doi.org/10.3390/nano12060965 **(IF. 5.076**) 5. Efficacy of citric acid chelate and*Bacillus* sp. amelioration of cadmium and chromium toxicity in wheat(**2022)** Chemosphere https://doi.org/10.1016/j.chemosphere.2021.133342 **(IF. 7.08**) 6. Role of nanosilicab to boost the activities of metabolites in *Triticum aestivum* facing drought stress(**2022)** Plant and

	Soil https://doi.org/10.1007/s11104-021-05285-1 **(IF. 4.192**) **7.** A new technique for reducing accumulation, transport, and toxicity of heavy metals in wheat (*Triticum aestivum* L.) by bio-filtration of river wastewater, (**2022)** Chemosphere https://doi.org/10.1016/j.chemosphere.2022.133642 **(IF. 7.08**) **8.** Biodegradation of PAHs by*Bacillus marsiflavi* , genome analysis and its plant growth promoting potential(**2022)** Environmental Pollution 0.1016/j.envpol.2021.118343 **(IF. 8.07**). **9.** Plant-associated rhizobacteria in plant growth and

	in
	8.

	metabolism as a tool for sustainable agriculture (**2022**) J of Applied Microbiology 00, 1–25. https://doi.org/10.1111/jam.157962022 3 Oct 2022 (**IF. 3.72**) **10.** Multifarious Indigenous Diazotrophic Rhizobacteria of Rice (*Oryza sativa* L.) Rhizosphere and Their Effect on Plant Growth Promotion (**2022**) Frontiers in Nutrition https://doi.org/10.3389/fnut.2021.781764 (**IF. 6.576**) **11.** Protective role of foliar application of greensynthesized silver nanoparticles against wheat stripe rust disease caused by *Puccinia striiformis* (**2022**) Green Processing and Synthesis 11(1): 29-43 (**IF. 2.83**) **12.** Halotolerant Rhizobacteria for Salinity-Stress Mitigation: Diversity, Mechanisms and Molecular Approaches. Sustainability. (**2022**) 14(1):490. https://doi.org/10.3390/su14010490 (**IF. 3.251**) **13.** Lead harms seed germination and growth of *Albizia lebbeck (*L*.)* Benth. and *Prosopis juliflora* (Sw.) Dc (**2022**) (**IF. 0.972**) **14.** Comparative analysis of iron oxide nanoparticles synthesized from ginger (*Zingiber officinale*) and cumin seeds (*Cuminum cyminum*) to induce resistance in wheat against drought stress (**2022**) Pakistan Journal of Botany 54(1): 121-124, 2022 http://dx.doi.org/10.30848/PJB2022-1(22) (**IF. 7.08**)

	15. Formulation and efficacy testing of bioorganic fertilizer produced through solid-state fermentation of agrowaste by *Burkholderia cenocepacia* (**2022)** Chemosphere https://doi.org/10.1016/j.chemosphere.2021.133201 **(IF. 7.08**) 16. Drought tolerant Pseudomonas sp. showed differential expression of stress-responsive genes and induced drought tolerance in Arabidopsis thaliana (**2022)** Physiologia Plantarum https://doi.org/10.1111/ppl.13497 **(IF. 4.50**) 17. Drought-tolerant *Bacillus megaterium* isolated from

	semiarid conditions induces systemic tolerance of wheat under drought conditions (**2022**) Plant Cell Reports 1-21 **(IF 4.570**) 18. Deciphering the Role of PlantDerived Smoke Solution in Ameliorating Saline Stress and Improving Physiological, Biochemical, and Growth Responses of Wheat (**2021**) Journal of Plant Growth Regulation https://doi.org/10.1007/s00344021-10473-5 **(IF. 4.169**) 19. Biosynthesis and characterization of titanium dioxide nanoparticles and its effects along with calcium phosphate on physicochemical attributes of wheat under drought stress (**2021**) Ecotoxicology and Environmental Safety https://doi.org/10.1016/j.ecoenv.2021.112519 **(IF.**

	6.2) . 20. Synergistic Effects of Plant Growth Promoting Rhizobacteria and Silicon dioxide Nano-Particles for Amelioration of Drought Stress in Wheat (2021) Plant Physiology and Biochemistry https://doi.org/10.1016/j.plaphy.2021.05.039 (IF. 4.270) 21. Development of a plant microbiome bioremediation system for crude oil contamination (2021) Journal Environmental Chemical Engineering https://doi.org/10.1016/j.jece.2021.105401 (IF. 5.909) 22. Biostimulation Potential of Biochar for remediating the crude oil contaminated soil and Plant Growth(2021) Saudi of Journal of Biological Sciences https://doi.org/10.1016/j.sjbs.2021.03.044 (IF. 4.219) 23. Role of *Bacillus cereus* in Improving the Growth and Phytoextractability of *Brassica nigra* (L.) K. Koch Chromium Contaminated Soil(2021) *Molecules 26* (6), 1569- 1589 (IF. 4.411) 24. A Strategy for Mitigating Avian Colibacillosis Disease Using Plant Growth Promoting Rhizobacteria and Green

	synthesized Zinc Oxide Nanoparticles (**2021**) *Saudi Journal of Biological Sciences* https://doi.org/10.1016/j.sjbs.2021.06.100

	(IF. 4.219) 25. Production of Plant Beneficial and Antioxidants Metabolites by *Klebsiella variicola* under Salinity Stress (2021) Molecules 26(7), 1894-1900 (IF. 4.411). 26. Volatile organic compounds produced by *Pseudomonas pseudoalcaligenes* alleviated drought stress by modulating defence system in Maize (*Zea mays* L.) (2021) Physiologia Plantarum https://doi.org/10.1111/ppl.13304 (IF. 4.50) 27. Plant growth and remediation potential of pyrochar (pyrolytic breakdown and biochar addition) in crude oilcontaminated soils. (2021) Scientific Reports https://doi.org/10.1038/s41598-021-82243-y (IF. 3.998) 28. Silicon Alleviate Hypoxia Stress by Improving Enzymatic and Non-enzymatic Antioxidants and Regulating Nutrient Uptake in Muscadine Grape (*Muscadinia rotundifolia Michx* .) (2021) *Front. Plant Sci.* 11:618873. doi: 10.3389/fpls.2020.618873 (IF. 4.379) 29. Foliar applications of plant-based titanium dioxide nanoparticles to improve agronomic and physiological attributes of wheat (*Triticum aestivum* L.) plants under salinity stress (2021) Green Processing and Synthesis https://doi.org/10.1515/gps-2021-0025 (IF. 2.83) 30. Inoculation of Klebsiella variicola Alleviated Salt

	Stress and Improved Growth and Nutrients in Wheat and Maize(**2021**) Agronomy *11* (5), 927 https://doi.org/10.3390/agronomy11050927 **(IF. 2.603**) 31. Exopolysaccharides Producing Bacteria for the Amelioration of Drought Stress in Wheat (**2020**) Sustainability 12(17): 8876-8891 **(IF. 2.576**) 32. I dentification of New Biocontrol Agent against Charcoal

	Rot Disease Caused by *Macrophomina phaseolina* Soybean (Glycine max L.) (**2020**) Sustainability 12(17):6856-6870 (**IF. 2.576**) 33. Identification of New Biocontrol Agent against Charcoal Rot Disease Caused by *Macrophomina phaseolina* Soybean (Glycine max L.) (**2020**) Physiologia Plantarum https://doi.org/10.1111/ppl.13237 (**IF. 2.576**) 34. Bacillus siamensis Reduces Cadmium Accumulation and Improves Growth and Antioxidant Defense System in Two Wheat (Triticum aestivum L.) Varieties (**2020**) Plants 9(7):878-891 (**IF. 2.762**) 35. Co-application of Bio-fertilizer and salicylic acid improves growth, photosynthetic pigments and stress tolerance in wheat under drought stress (**2020**) PeerJ https://doi.org/10.7717/peerj.9960 (**IF. 2.379**) 36. Isolation of Heavy Metal-Tolerant PGPR Strains and Amelioration of Chromium Effect in Wheat in Combination with Biochar. (**2020**) Iranian Journal of Science and Technology Transaction A-Science (**IF. 0.875**) 37. Amelioration potential of biochar for chromium stress in wheat (**2020**) Pakistan Journal of Botany 52 (4), 1159-1168 (**IF. 0.8**) 38. Optimization of Hexavalent Chromium

	[Cr(VI)] Reducing Strains for Accelerated Degradation Biphenyl and 2-Cholorbiphenyl in Tannery Wastewater (2020) International Journal Of Agriculture & Biology (IF. 0.802) 39. Effect of salt stress on tomato plant and the role of calcium (2020) Journal of Plant Nutrition 10.1080/01904167.2019.1659324 (IF. 1.132) 40. Quantitative trait loci (QTL) mapping for physiological and biochemical attributes in a Pasban90/Frontana recombinant inbred lines (RILs) population of wheat	in ; in in of

(*Triticum aestivum* L.) (**2020)** Saudi Journal of Biological Sciences https://doi.org/10.1016/j.sjbs.2019.10.003 **(IF. 2.802**)

41. Natural herbicidal potential of selected plants on germination and seedling growth of weeds (**2019)** Applied Ecology and Environmental Research http://dx.doi.org/10.15666/aeer/1704_96799689 **(IF. 0.712**)
42. Allelopathic potential of *Carica papaya* against selected weeds of wheat crop (**2019)** Pakistan Journal of Botany 51(1), DOI: 10.30848/PJB2019-1(37) **(IF. 0.8**)
43. Comparative allelopathic activity of *Rhazya stricta, Pinus roxburghii, Carica papaya* and *Lantana camara* against noxious weeds (**2019)** Applied Ecology and Environmental Research http://dx.doi.org/10.15666/aeer/1703_7175718 **(IF. 0.712**)
44. Allelopathic potential of *Pinus roxburghii* needles against selected weeds of wheat crop (**2019)** Applied Ecology and Environmental Research 17 (2), 1717-1739 **(IF. 0.712**)
45. Heavy metal phyto-accumulation in leafy vegetables irrigated with municipal wastewater and human health risk repercussions (**2019)** International Journal of phytoremediation 21(2):170-179 **(IF. 2.582**)
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48. Qadeer, S., Mahmood, S., Anjum, M., **Ilyas, N.,** Ali, Z., & Khalid, A. (2018).

	Synchronization of lipid-based biofuel productionwithwastetreatmentusingoleaginousbacteria:A

	biorefinery concept*Process Safety and Environmental Protection* , *115* , 99-107. (**Impact factor = 3.441**). **49.** Anwar, T., **Ilyas, N.,** Qureshi, R., Munazir, M., Khan, A. M., Ansari, L., ... & Panni, M. K. (2018). Allelopathic activity of solvent extracts of Rhazya stricta Decne. against selected weeds of wheat crop*Appl. Ecol. Environ. Res* ,*16* (5), 5405- 5421. **(Impact factor = 0.7).** **50.** 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. *Pakistan Journal of Agricultural Sciences* ,*55* (1). (**Impact factor = 0.494).** **51.** Batool N and **N. Ilyas.,** 2018. Physicochemical and Antimicrobial properties of canola (Brassica napus L.) seed oil Pakistan Journal of Pharmaceutical Sciences (PJPS) 55(1), 47-55 **(Impact factor = 0.682).** **52.** BatoolN,M.Arshad,F.Hassan,**N.Ilyas**,A.Shahzad. 2018. Review-A review of therapeutic potential of MangiferaindicaPakistanJournalofPharmaceutical
	Sciences(PJPS)31(4):1441-1448**(Impactfactor= 0.682).** **53.** **Ilyas, N.,** Ambreen, F., Batool, N., Arshad, M., Mazhar, R., Bibi, F., & Saeed, M. (2018). Contribution of Nitrogen Fixed byMungBeantotheFollowingWheat Crop.*Communicationsinsoilscienceandplant analysis* , *49* (2), 148-158. **(Impact factor = 0.589).** **54.** **Ilyas, N**., Gull, R., Mazhar, R., Saeed, M., Kanwal, S., Shabir, S., & Bibi, F. (2017). Influence of salicylic acid and jasmonicacidonwheatunderdroughtstress*Communicationsins oilscienceandplant analysis* ,*48* (22), 2715-2723. **(Impact factor = 0.589).** **55.** 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 (Triticum aestivum L.)*Journal of plant nutrition*,*41* (4), 5268.**(Impactfactor=0.618).** **56.** 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 rainfedconditions*Pakistan Journal of Botany*,*49* (6)**(Impact factor = 0.690).** **57.** 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. Journal of Plant Nutrition.40(9): 1250-1260. **(Impact factor = 0.168).** **58.** Saeed, M., **Ilyas, N.,** Mazhar, R., Bibi, F., & Batool, N. (2016). Drought mitigation potential of Azospirillum inoculation in canola (Brassica napus). *Journal of Applied Botany and Food Quality* , *89* . **(Impact factor = 1.06).** **59.** 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*International Journal of Agriculture & Biology* ,*18* (3). **(Impact factor = 0.746).** **60.** Kausar, F., Khalid, A., Mahmood, T., &**Ilyas, N.** (2016). Efficacy of Bacterial Strains Isolated from TextileWastewater for Degradation of Azo Dye AssociatedAromatic Amines*International Journal of Agriculture & Biology* , *18* (6). **(Impact factor =0.746).**
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Courses taught	• Plant Physiology • PlantCell Biology • Plant Genomics • ConservationandManagementof Resources

M.Phil thesis supervised	1. Screening of Pakistani Wheat (*Triticum aestivum* L.) Varieties for Thermo-Tolerance Against Heat Shocks. 2. *In Vitro* And Molecular Characterization of Transgenic Wheat (*Triticum aestivum* L.) Resistant for Bacterial Diseases. 3. Comparative Study of Bacterial Diseases Susceptibilityin Local Transgenic and Non-Transgenic Wheat Varieties. 4. Effect of UV, Gamma and X-Rays Radiations on Morphological and Physiological Characters of Different Varieties of*Zea mays.* 5. Mirco-Propagation of Myrtle (*Myrtus communis* L.) 6. Morphological and Physiological Effects of UV, Gamma and X-Rays on Different Varieties of Wheat (*Triticum aestivum* L.) 7. Detection and Characterization of Anti-MircobialActivity of*Aloe vera* Gel. 8. Establishment of an Efficient Protocol for Callus Induction and Regeneration of*Cassia angustifoli.* 9. Effect of Light Regime and Growth Promoters on *InVitro* Seed Germination of Sea Buckthorn. 10.*InVitro* Propagation of*Citrus Reticulata.* 11. Ethnobotanical Wisdom of The Inhabitant of Devi Galli, Azad Kashmir. 12. Biological and Analytical Characterization of Black-Pepper Seed Oil. 13. Composition and Physiological Effects of *Silybum marianum* Seed Oil. 14. Antibacterial andAntifungal Effects ofAloe,Turmeric

	And Lemon and Their Potential Role in Callus Induction and Regeneration. *22.* InVitro 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 *Citrusreticulata* L.UnderBioticStress. *26.* Evaluation of Antifungal and Antibacterial Activities of Green Silver Nano-Particles Synthesized from *Citrus reticulata* L. *27.* Effect of Green Silver Nano-Particles on Morphogenicand Biochemical Variations in Callus Cultures of *Citrus Reticulata* L. Under Different Spectral Lights. *28.* Effect of Plant Based Silver Nano-Particles on Germination and Post Germination Expression of Rice Against *Aspergillus flavus.* *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 Screeningof 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 SalinityStress.

	35. Effects of green synthesized silver nanoparticles on *Zea mays* under drought stress. *36.* Evaluation of green synthesized Silver Nanoparticles for Anti-fungal activity in Date palm fruit (*Phoenix dactylifera* L.) *37.* Assessment of green synthesized Silver Nanoparticles against fruit canker of Guava (*Psidium guajava*) *38.* Response of phytosynthesized multivariant micronutrient based nano-fertizer on bread wheat *39.* Antimicrobial and Antioxidant potential of *Olea Ferruginea* mediated selenium nanoparticles *40.* Study the effect of CRISPR/cas9 based GBSS gene knockout in potato *41.* Development of Nano-super solution to improve yield in wheat by foliar spray *42.* Development of insecticidal nano- composite solution to control termite losses in rice *43.* Development of Nano-biocidal spray to treat Bacterial disease in plants. *44.* Qualitative and quantitative analysis of *Brassica sp.* after application of iron nanoparticles. *45.* Cytotoxic effect of Se/Fe/ Zn/ Ag/Cu/Ce Nanoparticles on shrimp's larvae. *46.* Anti-diabetic activities of Zn nano particles synthesized from *Azadirachta indica* *47.* Ethnobotanical study of selected medicinal plants of Neelum Valley as a threptic agents to manage diabetes. *48.* Green synthesized Se nanoparticles from *Hamilia*

	hetromalla and evaluation of their Anti-diabetic activities. *49.* Assessment of *in vitro* anti-diabetic activity of Zn-Se nanocomposites from *Justicia adhatoda*

	50. Amplification of rooting by using nano-formulation in cuttings of selected fruiting plants. *51.* Evaluation of insecticidal potential of bio-fabricated silver nanoparticles in Zea mays against armyworm fall disease. *52.* Optimizing Plant Grafting via Nanoparticle-Mediated Delivery Systems for Growth Promoting Compounds *53.* In Vitro Assessment of Rooting and Shooting Capability: Aloe Vera-Based Nanoparticles as Novel Biostimulants for Plant Growth.
Ph.D thesis supervised	• Morpho-Physiological and Biochemical Response of Wheat (T*riticum aestivum* 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 C*apsicum* spp. (**Samina Yasmin Ph.D. completed in 2018)** • StrategiesforTheProductionofChemicallyConsistent Plantlets of *Citrus reticulata L.* . (**Mubashir Hussain Ph.D. completed in 2019**).
	Synthesis and Characterization of TiO_2 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 progres**s).
	• Response of Bread Wheat to green bimetallic Ag/ZnO alloy nanoparticles and fertilizers**(Maria Ehsan in Progress**). • Biofabrication of selenium nanoparticles and assessment of their antioxidant and antimicrobial and application potential in*Citrus reticulate* (**Muhammad Ikram**) • Differential Role of Phytogenic Se/Fe Hybrid Nanoparticles on Wheat in Response to Heat stress(**Fozia Abbasi**) • Synthesis and Evaluation of Silver Selenium Nanocomposite against Bacterial diseases in Cotton(**Sajid Hussain**) • Assessing the potential of Silver Selenium Nanocomposite as a sustainable solution for fungal diseases in apple (Malus domestica) orchards.(**Shakil Sabir**)
Ph.Dthesisco-supervised	1. HinaWaheed(2018)

Publications(Nonimpact factor)	1. IqbalM,Y.Bibi,**N.I.Raja,**M.Ejaz,M.Hussain,F.Yasmeen , H. Saira, M. Imran. 2017. Review on Therapeutic and Pharmaceutically Important Medicinal Plant *Asparagus officinalis L. Journal of Plant BiochemistryandPhysiology,* 5(1):180-186. 2. IqbalM.,**N.I.Raja,**F.Yasmeen,M.Hussain,M.Ejaz andM.A.Shah.2017.Impacts of Heat Stress on Wheat: A Critical Review*Advances in Crop Science and Technology,* 5(1):1-9. 3. Shabir,A.,N.I.Raja,U.Javaid,N.U.A.Zafar,H.Javed, F.Yasmeen.2017.Ethnobotanical Wisdom of Inhabitant of Devi Galli Azad Kashmir*BiomedicalJournalof Science&TechnicalResearch,* 1(6):1-11. 4. MazharR;N.Ilyas;**N.I.Raja;**M.Saeed;M.Hussain; W.Seerat;H. Qureshi;SumeraShabir. 2016.Plantgrowth promoting Rhizobacteria: Biocontrol potential for pathogens*PureandAppliedBiology,* 5(4):1288-1295. 5. IqbalH;M.Shoaib;M.Usman;S.Aziz;M.A.Yousaf; M.J.Asad;**N.I.Raja**;M.M.Zafar;S.Nazir.2016.In vitroStudy:SuppressionofLDLOxidationUsingGreen LeafyVegetableLeaves*American-EurasianJournalof AgricultureandEnvironmentalSciences,* 16(2):380-384. 6. QureshiH;MArshad;A.Akram;**N.IRaja;**S.Fatima;

	M. S. Amjad. 2016. Ethno pharmacological and phytochemical account of paradise tree (*Melia azedarach* L.: Meliaceae). *Pure and Applied Biology,* 5(1):5 -14. 7. HussainM;N.I.Raja;M.Iqbal;A.Iftikhar;H.M.Sadaf;S. Sabir; M. A. Sultan;M. Nasim. 2016. Plantlets Regeneration via Somatic Embryogenesis from the Nucellus Tissues of Kinnow Mandarin(CitrusreticulataL.).Am erican Journal of Plant Sciences,7(6):798-805. 8. IqbalM;S.Asif,N.Ilyas,N.I.Raja,M.Hussain,S.Shabir, A. Rauf. 2016. Effect of Plant Derived Smoke onGermination and Post Germination Expression of Wheat(Triticum aestivumL.). American Journal of PlantSciences,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. *Journal of Biodiversity and Environmental Sciences.* 10. Qureshi R, H. Qureshi, H. Shaheen, G. Rahim, W.Ahmed, **N. I. Raja**. 2012. Medico-Ethnobotanical Knowledge of Jhang Saiyidan, Islamabad, Pakistan.

Archives in Disease Sciences, 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.*Journal of Medicinal Plants Research,* 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.

PakistanJournalofAgriculturalResearch ,171.21(1-4):165.

13. Aslam S; **N. I. Raja;** M. Hussain; M. Iqbal; M. Ejaz; D. Ashfaq; H. Fatima; M. A. Shah, Abd-UrRehman; M. Ehsan. **2017**. Current Status of *Withania somnifera* (L.)

Dunal: An Endangered Medicinal Plant from Himalaya American Journal of Plant Sciences, 8:1159-1169.

14. Iqbal M; N. I. **Raja;** S. Asif; N. Ilyas; M. Hussain; F. Yasmeen; M. Ejaz; M. A. Sultan; S. Aslam; H. Javed.

2016. *In Vitro* Study of Callogenesis and Regeneration Potential of Elite Wheat (*Triticum aestivum* L.)

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.	15. Hussain M., **N.I. Raja,** A. Akram, A. Iftikhar, D. Ishfaq, F. Yasmeen, R. Mazhar, M. Imran, M. Iqbal. **2016** . A status review on the pharmacological implications*Artimisia absinthium* – A critical endangered plant from Himalaya. Asian Pacific Journal of Tropical Disease, 7 (3): 185-192. 16. Hussain M, Y. Bibi, **N. I. Raja** , M. Iqbal, S. Aslam, N. Tahir, M. Imran, A. Iftikhar. **2016.** A review

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	therapeutic potential of *Ajuga bracteosa* : A critically endangered plant from Himalaya. Journal of Coastal Life Medicine, 4(11):918-924. 17. 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 *Viola canescens* – A threatened medicinal plant from Himalaya. Journal of Coastal Life Medicine, 4(7):575579. 18. Hussain M;***N. I. Raja*** ;*M. Iqbal* ;*A. Iftikhar* ;*H. M. Sadaf* ;*S. Sabir* ;*M. A. Sultan* ; M. Nasim. **2016**.*Plantlets Regeneration via Somatic Embryogenesis from the Nucellus Tissues of Kinnow Mandarin (*Citrus reticulata*L.) .American Journal of Plant Sciences* , 7(6):798-805. **(Non-impact)** 19. Iqbal M; *S. Asif* , *N. Ilyas* , ***N. I. Raja*** , *M. Hussain* , *S. Shabir* , *A. Rauf* . **2016.** *Effect of Plant Derived Smoke on Germination and Post Germination Expression of Wheat (*Triticum aestivum *L.)* . *American Journal of Plant Sciences* , 7(6): 806-813. **(Non-impact)** 20. Qureshi R, H. Qureshi, H. Shaheen, G. Rahim, W. Ahmed, **N. I. Raja**. **2012**. Medico Ethnobotanical Knowledge of Jhang Saiyidan, Islamabad, Pakistan. Archives in Disease Sciences, 65(12):1-13.**(NonImpact)** 21. Iqbal M, Y. Bibi, **N.I. Raja,** M. Ejaz, M. Hussain, F. Yasmeen, H. Saira, M. Imran. **2017.** Review on Therapeutic and Pharmaceuticall y Important Medicinal Plant *Asparagus officinalis L.* Journal of

	Plant Biochemistry and Physiology, 5(1): 180-186. **(Nonimpact)**

	22. 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. Advances in Crop Science and Technology, 5(1):1-9. **(Non-impact)** 23. 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. Biomedical Journal of Science & Technical Research, 1(6):1-11. **(Non-impact)** 24. Iqbal H; M. Shoaib; M. Usman; S. Aziz; M. A. Yousaf; M. J. Asad;**N. I. Raja**; M. M. Zafar; S. Nazir. **2016**. *In vitro Study: Suppression of LDL Oxidation Using Green Leafy Vegetable Leaves.* AmericanEurasian Journal of Agriculture and Environmental Sciences, 16(2):380384.**(Non-impact)** 25. Qureshi H; M Arshad; A. Akram; **N. I Raja;** S. Fatima; M. S. Amjad. **2016**.*Ethnopharmacological and phytochemical account of paradise tree (*Melia azedarach*L.: Meliaceae).* Pure and Applied Biology, 5(1):5-14. **(HEC Recognized Y Category)**
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 ,Radio biology

Impact factor Publications	**ImpactFactorPublication** 1. Ali, A., Ahmad, I., Raja, N. I., Mohammad, S., & Khan, S. U. (2022). Plant in vitro cultures: A promising and emerging technology for the feasible production of antidiabetic metabolites in Caralluma tuberculata. Frontiers in Endocrinology, 13. (IF: 6.055) 2. Shahbaz M., N. Fatima, Z. R. Mashwani, A. Akram, A. Mehak, F. Abasi, M. Ajmal, T. Yousaf, N. I. Raja, H. UlHassan and J. M. P. Lastra. 2022. Effect of Phytosynthesized Selenium and Cerium Oxide Nanoparticles on Wheat (Triticum aestivum L.) against Stripe Rust Disease. Molecules. 27(23): 8149 https://doi.org/10.3390/molecules27238149 **(IF: 4.927)** 3. Ilyas A. Z. R. Mashwani, N. I. Raja, A. Kazmi, A. Wah ab, A. Ali, Z. Younas, S. Yaqoob, M. Rahimi. 2022 "Comprehensive Approaches of Nanoparticles for Growth Performance and Health Benefits in Poultry: An Update on the Current Scenario", BioMed Research International, vol. 2022, Article ID 9539908, 13 pages, https://doi.org/10.1155/2022/9539908. **(IF: 3.246)** 4. Ehsan, M.; Raja, N.I.; Mashwani, Z.U.R.; Zohra, E.; Abasi, F.; Ikram, M.; Mustafa, N.; Wattoo, F.H.; Proćków, J.; Pérez de la Lastra, J.M. Effects of

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M.Phil thesis supervised	**Sherish Javed** (2011) Phytochemical quantification and biological screening of *Artemesia vulgaris* L.inn. **Uzma Bashir** (2011) Chemical and Biological characterization of *Boerhavia procumbens* **Saadia Irum** (2012) Phytochemical and antioxidant potential of *Berberis lycium* Royle. **Humara Amir** (2013) Phytochemical and Pharmacognostic evaluation of *Amaranthus viridis* and *A. spinosus* **Raheela Ismail** (2013) Nutraceutical Potential of wild vegetables *Rumex hastatus* and *R. nepalansis* **Shabnum Bibi** (2013) Pharmacognostic and phytochemical screening of *Sisymbrium irio* L. **Arsh Bibi** (2014) Comparative secondary metabolites analysis and antioxidant potential in calli of *Nigella sativa* L. **Ayesha Rehman** (2014) Differential secondary metabolites analysis and antioxidant potential in calli of *Cassia absus* L. **Tasneem Bashir** (2015) Phytochemical composition and nutracetical evaluation of Morus alba fruit. **Ubaid Ul Hassan** (2015) Phytochemical characterization

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	And biochemical profile of Zeamays 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 (Triticum aestivum).

	• **Asma Ibrar**(2019)Biological evaluation of various solvent extracts of Hylotelephium ewersii and Oxyria digyna. • **Kiran Gul**(2019)Biological evaluation of various solvent extracts of Artemisia glacialis and Rheum austral. • **Safia Rani**(2019)Zinc Nanoparticles assisted bio fortification of wheat*(Triticum aestivum)* • **Sundus Khursheed (2019)** Toxicity assessment of Zinc nanoparticles on*Brassica napus* . • **Iqra Syed (2020)**Natural dye mediated synthesis of silver nanoparticle and pharmacological potential • **Riaz Khan (2020)** Response of tomoato to foliar application of salicyclic acid and Zinc nanoparticle. • **Laraib Nawaz (2021)** *Mentha arvensis m* ediated synthesis of Cerium oxide nanoparticle for evaluation against bacterial plant pathogen • **Rabia Fareed (2021)** Fabrication of*Mentha longifolia* leaf extract assisted Cerium oxide nanoparticle and evaluation of antibacterial properties • **Zohaib Younas (2022)** Varietal response of Selenium nanoparticles for seed germination, biochemical characterization and antioxidant profiling of different
	varieties of*Sesamum indicum* • **Tayyaba Yousaf (2022)** Hypoglycemic activity of Mint based Cerium Oxide Nanoparticles

	▯ **Said Rahim (2022)** Comparative Antihyperglycemic activity of green synthesized silver nanoparticles and alcoholic extract of wild *Olea ferruginea* Royle
Ph.Dthesis supervised	▯ **Muhammad Faraz Khan** (**2019**) Ethnobotanical profile and biological screening of selected medicinal plants of Sudhanoti, Azad Kashmir. ▯ **Sohail** (**2020**)ResponseofCanola toGreen SynthesizedZinc Nanoparticle. ▯ *Mentha arvensis* mediated synthesis of Cerium oxide nanoparticle for evaluation against bacterial plant pathogen ▯ Fabrication of *Mentha longifolia* leaf extract assisted ▯ Cerium oxide nanoparticle and evaluation of antibacterial properties ▯ Varietal response of Selenium nanoparticles for seed germination, biochemical characterization and antioxidant profiling of different varieties of *Sesamum indicum* ▯ Hypoglycemic activity of Mint based Cerium Oxide Nanoparticles ▯ Comparative Antihyperglycemic activity of green synthesized silver nanoparticles and alcoholic extract of wild *Olea ferruginea* Royle.
Ph.Dthesisco-supervised	▯ EvaluationofAnti-microbialandAntioxidantActivityofGreen Silver Nanoparticles in Citrus reticulata L. (**Mubashir HussainPh.D.completedin2019**).

Publications	**112** (Cumulative impact factor: **370.86**, Citation: **3660**, h-index: **34**, i10 index= **64**)
ResearchInterest	Nanobiotechnology;ImprovementofOilseedCrops,Medicinal Plants; Ethnobotany.
ImpactfactorPublications	1. Matiullah, Amjad, UR. Zahid, U. Aamir, S. Qureshi, R. Burslem, D. F.R.P. & **Mashwani, ZuR.** (**2022**). Distribution Pattern of Tree Species and Richness along an Altitude Gradient in the SubAlpine Temperate Zone of Hindu Kush Mountainous Forests, Pakistan: Tree species richness along elevation gradient. Proceedings of the Pakistan Academy of Sciences: B. Life and Environmental Sciences, 59(4), 81–92. https://doi.org/10.53560/PPASB(59-4)741 (**HEC Recognized X category**) 2. Ali A, **Mashwani ZuR**, Ahmad I, Raja NI, Mohammad S and Khan SU **(2022)** Plant in vitro cultures: A promising and emerging technology for the feasible production of antidiabetic metabolites in*Caralluma tuberculata* . Frontiers in Endocrinology. 13:1029942. https://doi.org/10.3389/fendo.2022.1029942 (**IF: 6.055, W**)
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M.Philthesissupervised	1.PharmacologicalStudiesonSelectedPlantSpecies

	from Thal Desert, Pakistan **(Khurshid Anwar, Thesissubmitted. 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 SelectedMedicinal Plant Species **(Irum Khalid, Research work in Process 2021-2022)** 4. CytotoxicityAssessmentofFractionatedExtractsof *Euphorbia royleana* **(Neelum Naheed, Research work in process 2021-2022)** 5. Biological Efficacy of PurifiedCompounds from Selected plant Species **(Ayesha Khanum,Research work in process 2021-2022)** 6. Cytotoxic and AntimicrobialEfficacy of *Alhagi maurorum* **(Syeda Sobia Gillani M.Philcompleted in 2020)** 7. Pharmacological Evaluation of *Pseudocrypoteris foetida* Extracts **(Tayyiba Afzal M.Phil completed in 2020)** 8. Antioxidant and Phytochemical Analysis of *Prinsepia utilis* Extracts **(Saiqa Sharif M.Phil**

	completed in 2020) 9. Cytotoxicity Assessment of *Thalictrum foliolosum* leaves and Roots Extracts **(Rozina Ishaq M.Phil completed in 2020)** 10. Green Synthesis Of Silver nanoparticlesfrom selected Species and their effect on Bioactivities **(Aroosa Habib M.Phil completed in 2019)** 11. Bioactivities on*Ficus palmata* and *Calotropis Procera* Extracts **(Raafia Batool ChaudhryM.Phil completed in 2019)** 12. Antioxidant and antimicrobial effects of *Withania Coagulans* Fruit Extracts **(Bibi Fiza M.Phil completed in 2019)** 13. Neutraceutical analysis of some underutilized plant species **(Kiran Javed M.Phil completed in 2018)** 14. Neutraceutical 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. Evaluationofphytotoxicactivityof*Thevetia Peruviana* extracts**(NajmaParveenM.Phil**

	completedin 2018) 17. Investigation of Cytotoxic and Antimicrobial Potential of *Myrsine Africana* **(Sadaf Laraib M.Phil completed in 2017)** 18. Antioxidant and Cytotoxic Activities of Selected 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 *Capsella bursa- pastoris* **(Iqra Riaz M.Phil completed in 2016)** 22. Nutritional and Medicinal Evaluation of *Solanum villosum* **(Nabeela Ahmad M.Phil completed in 2016)** 23. AntioxidantandCytotoxicEvaluationof*Caralluma tuberculate* **(Mudrikah M.Phil completed in2015)** 24. In vitro ToxicityAssessment of *Cedrela serrata* Extract **(Shaista Tabasuum M.Phil completed in 2015)** 25. PharmacologicalStudieson*Bidensbiternata* **(KulsoomZaharaM.Philcompletedin 2015)** 26. BiochemicalEvaluationof*Kickxiaramosissima* (ZakiaBinish M.Philcompletedin2014) 27. Investigation on Antimicrobial Effects of *Echinops echinatus* **(LunbaShafiqueM.Philcompletedin 2014)**

Ph.Dthesis supervised	1. Identification and Characterization of Antioxidant and Cytotoxic Activities of Selected Medicinal Plants of Gallyat Region, Pakistan (Muhammad Ishaque Ph.D.completed in 2018). 2. BioassayGuided Assessment of Selected Medicinal Plants of Pakistan. (Huma Mehreen Sadaf Ph.D. In Process of foreign evaluation 2021) 3. Bioassay guided characterization of selectedBidens species (Kulsoom Zahara Ph.D. In Process of foreign evaluation 2021) 4. Cytotoxicity Guided Screening andCharacterization of Selected Solanaceous Plant Extracts. (Iqra Riaz Ph.D. In thesis write up2021). 5. Evaluationofplantextractbasedstrategyforfoodbio-preservation(NadiaSardarPh.D. Inthesiswriteup2021).
Ph.DthesisCO-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**).

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ResearchInterest	PlantBasedNaturalProducts,Bioevaluation,Isolation& ChemicalCharacterization
ImpactfactorPublications	ImpactFactorPublication
	ImpactFactor Publication 1. Ahmed,S.,Owen,C.P.,Waheed,A.,Nisa,S.,Bibi, Y., & Chaudhary, M. F. (2009). Biochemical evaluation of extracts from Caralluma tuberculata against hormone-

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ResearchInterest	Plant Biotechnology, Environmental toxicology & bioremediation, Environmental biotechnology, Sustainable Biomass Energy Production.
M.Philthesissupervise(on- going)	1. Investigation of methyl ester potentiality of waste seeds of *Xanthium spinosum* 2. Eco-taxonomicstudiesofPaharPurrangedistrictDera Ismail Khan 3. Optimalgenerationofrenewableenergyfromnon-edible

	Biomassviapyrolysis 4.Utilizationofglyceroltoglycerolcarbonatevia transesterification reaction in a Bubble mediated reactor
ImpactfactorPublications	**LatestPublications** 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 comparativestudyofthe in vitro enzyme inhibitory and antioxidant activities of Butea monosperma (Lam.) Taub. and Sesbania grandiflora (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 (Triticum aestivum L.) by improving morphological, physiological and biochemical activity, Biotechnology Reports, 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, Industrial Crops and Products, 108, 336-347. **Impact Factor = 4.191** 4. **AsifS.,**ChuahL.F.,KlemesJ.,AhmedM.,Akbar M.M., Keat T.L., Fatima, A., (2017) Cleaner

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M.Phil thesis supervise(on- going)	1. Investigation of methyl ester potentiality of waste seeds of *Xanthium spinosum* 2. Eco-taxonomic studies of Pahar Purrange 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

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Coursestaught	• Ethnobotany • ResearchTechniquesandinstrumentation • Phytosociology • Plant Ecology • Plant TaxonomyandEmbryology • Biodiversity • PrinciplesofBio technology
M.Philthesissupervised	TaxonomicdiversityoffamilyAsteraceaeindistrictDera Ismail khan, Pakistan. EvaluationofantifungalactivityofgreenMaganesenanoparticles against wheat rust EthnogynocologicalsurveysofplantsinGujrat Immobililization of heavy metals fromcontaminated soil and evaluation of multi-variant nanoparticles from*olea europae* Evaluation of antifungal activity of G reen
	Manganese nanoparticals against Wheat Rust

	Pollen diversity of herbaceous plants of district Jhelum Leaf epidermal anatomy of Boraginaceae family from district Mianwali. Palo anatomical study of selected plants of Brassicaaceae family of district Narowal Palynological anatomical study of weed of wheat
Ph.Dthesis supervised	Effect of Nanofertilizers on growth, productivity and bio fortification of *Brassica campestris* Pollen diversity in honey samples of Bee flora in division Bannuu KPK Pakistan Application of medicinal plant based nanoparticles for Biological activities from Margallah hillls National Park Islamabad Systematic study and ethnomedicinal use of plant diversity from Kala Bagh district Mianwali Systemics of tribe Mysotidea in Pakistan.
Ph.Dthesisco-supervised	NIL
Publications(Nonimpact factor)	NIL
ResearchInterest	PlantEcology;Phytosociology;PlantBiosystematics;Plant Taxonomy; Medicinal Plants; Ethnobotany, Biodiversity
ImpactfactorPublications	Ansari, L., Ahmad, W., Saleem, A., Imran, M., Malik, K., Hussain, I., ... & Munir, M. (2022). Forest Cover Change and Climate Variation in Subtropical Chir Pine Forests of Murree through GIS. *Forests*, *13* (10), 1576.
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SUMMARYAND CONCLUSION

In the department of Botany, Pir Mehr Ali Shah Arid Agriculture Rawalpindi, this Self- Assessment Report (SAR) encompasses the activities carried out for BS Program from fall semester 2021-2022 The prior objective of Self-Assessment Report (SAR) was to examine academic activities as perceived by students of the Department of Botany.

Botany is a diverse profession that encompasses all aspects and fields of plants. The Department has well-structured academic Program of BS Department is actively engaged in academic activities.The successful graduates produced by the Department of Botany are proving their worth in practical field is great assets in field of botany. In order to assess whether department is fulfilling its objectives or not, surveys on various aspects such as courseevaluation, teacher evaluation, alumni survey, graduating students surveys and faculty survey etc., have been conducted by the departmental members of the program team. The data revealed that students are satisfied with the subject approach of faculty members, their fairness in examination, and level of knowledge. The objective of BS program is to prepare all future graduates for technical and professional success. This is summarized in the following Self- assessment report for Department of Botany, which is focused on achievements of our graduates in last 2 academic years 2021-2022. Basic needs for improving BSProgram is that the Institutional facilities should be improved like provision of computer library, better lecture halls and laboratories.

So institutional support in this regard can play a vital role in stream lining the sustained development of institution to update the knowledge of the faculty member.The program is focused on improving student's ability to apply knowledge of plant sciences so they can design and conduct experiments, as well as analyze and interpret data.

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