Resume / Curriculum Vitae

OBJECTIVE: To work with a team of professionals in an organization, where ample opportunities for enhancing skills as well as growth.

PERSONAL INFORMATION:

Family name:	Nutkani, Baloch
First names:	Nosheen
Last name:	Mirza
Profession:	Associate Professor (BPS-20), Ghazi University, Dera Ghazi Khan, Pakistan.
Professional Degree:	Post-Doc Environmental Engineering PhD Environmental Sciences MSc (Hons) & BSc (Hons) Soil and Environmental Sciences
Marital Status:	Married
Date of birth:	16-08-1978
Nationality:	Pakistani
Place of Birth:	Abbottabad (Khyber Pakhtoonkhawa)
Domicile:	Haripur (Khyber Pakhtoonkhawa)
C.N.I.C:	13302-0359020-8
Passport #:	AA0910202
Phone No:	+92 331 5102133
Permanent address:	Busti Noor Pur, Post Office Shadan Lound, Tehsil & District Dera Ghazi Khan, Punjab, Pakistan
Postal address:	Department of Soil and Environmental Sciences, Ghazi University, City Campus, Dera Ghazi Khan.

KEY SKILLS:

Good analytical skills with a practical approach to solve problems, effective interpersonal communication skills and effective team management. Ability to work under pressure and accepts challenges. Desire to enhance more methods and techniques pertaining to research, environment and development.

SUMMARY OF QUALIFICATIONS:

Certificate / Degree	Board/College / University	Passing Year	Marks/ CGPA	Division /Grade	Major Subject(s)/Research
S.S.C. in Science	BISE Abbottabad Pakistan	1995	625/850	1st	Biology, Mathematics, Physics, Chemistry, English, Urdu
F.Sc. Pre-medical	BISE Abbottabad Pakistan	1997	777/1100	1st	Biology, Physics, Chemistry, English, Urdu
B.Sc. (Hons.) Soil & Environmental Sciences	N.W.F.P Agricultural University, Peshawar, Pakistan	2001	3.32/4.00	1st	Soil Microbiology, General Weed Sci., Environmental Biophysics, Soil Management, Soil Sci., Biochemistry, Plant Sci., Agriculture Chemistry, Air Photo Interpretation.
M. Sc. (Hons.) Soil & Environmental Sciences	N.W.F.P Agricultural University, Peshawar, Pakistan	2003	3.61/4.00	1st	Soil Physics, Chemistry, Soil Microbiology & Biochemistry, Instrumental Methods & Plant Analysis, Conservation of Soil & Environment, Trace element-Agriculture Environment
Ph. D. in Environmental Sciences	COMSATS Institute of Information Technology, Abbottabad, Pakistan	2013	3.57/4.00	1st	Analytical Techniques, Solid Waste Management, Wastewater Treatment, Wetland, Phytoremediation of Arsenic.
Post-Doctoral Fellowship, in Metallurgical & Environmental Engineering	Central South University Changsha, Hunan, China	2016	……	1st	The potential use of *Vetiveria zizanioides* and *Boehmeria nivea* L. for the phytoremediation of antimony, arsenic and their co-contamination.

EMPLOYMENT RECORD:

Period		Institution / Organization	Position / Job Title
From	***To***		
Apr.2021	To date	Ghazi University, Dera Ghazi Khan	Associate Professor (BPS)
Jul. 2013	Mar.2021	COMSATS Institute of Information Technology, Abbottabad	Assistant Professor (TTS)
Mar.2010	Jun.2013	COMSATS Institute of Information Technology, Abbottabad,	Lecturer
Dec.2004	Mar.2010	COMSATS Institute of Information Technology, Abbottabad,	Research Associate
Sep.2004	Dec.2004	SUNGI Development Foundation, Pakistan	Field Coordinator

PUBLICATIONS:

S. #	Name of Authors	Name of Journal	Title of the Publication	Vol. & Page #	Year published	IF
1.	Khan, M.N., M. Siddique, **N. Mirza** et al….	Frontiers In Environmental Science	Synthesis, Characterization, and Application of Ag-Biochar Composite for Sono-Adsorption of Phenol	2022	2022	4.24
2	H. Mubarak., **N. Mirza** and M. Hussam.	International Journal of Advanced Research Trends in Science (IJARTS)	Effects of climate change on wool production and crop yield by livestock management station in Jaba district, Mansehra, KPK, Pakistan	-	2022	-
3	H. Mubarak., **N. Mirza** and M. Athar.	International Journal of Advanced Research Trends in Science (IJARTS)	Effect of agronomic practices on *Ocymum basilicum*	-	2022	-
4.	Akram et al.,……..	Research on Climate Change Issues Springer, Cham (Book Chapter)	In: Jatoi W.N., Mubeen M., Ahmad A., Cheema M.A., Lin Z., Hashmi M.Z. (eds) Building Climate Resilience in Agriculture. pp 255-268, Springer, Cham. https://doi.org/10.1007/978-3-030-79408-8	Book Ch. 255-268	2021	…..
5.	Zubair, M., Khan, Q.U., **Mirza, N**. et al.	Environmental Science and Pollution Research.	Physiological response of spinach to toxic heavy metal stress	31667-31674.	2019	2.914
6.	Bashir M.A.,…….**Mirza N**., et al.	Saudi Journal of Biological Sciences	Insect pollinator diversity in four forested ecosystems of Southern Punjab, Pakistan.	26 (07) 1835–1842	2019	2.564
7.	Khan M.J., T.H. Flower, H. Mubarak, Q. Khan, **N. Mirza***, Kalimullah, M. Imran, T. Haq, M. Z. Hashmi, M. A. Qayyum	Fresenius Environmental Bulletin – HEC Recognized	Economic and accurate chromium determination via modeling and monitoring the removal of adsorbed hexavalent chromium by least cost organic wastes and the optimization of flame atomic absorption spectrophotometer (FAAS).	28(1) : 5-14	2019	0.673
8.	Shaheen S., Q. Mahmood, R. Ahmad, H. Mubarak, **N. Mirza**, T. Hayat T.	International Journal of Phytoremediation.	Physiology and Selected Genes Expression under Cadmium Stress in *Arundo donax* L.	20(11) 1162-1167	2018	2.238
9.	Amin, A., W. Nasim, M.M. Saleem, S. Peter, U. Ashfaq, A. Aftab, W. T, K. Fahd, **N. Mirza** et al.	Theoretical and Applied Climatology - HEC Recognized	Regional climate assessment of precipitation and temperature in Southern Punjab (Pakistan) using SimCLIM climate model for different temporal scales.	131:121–131	2018	2.64
10.	**Mirza N.,** Mubarak H*., Chai L.Y., Yong W., et. al.	Bulletin of Environmental Contamination and Toxicology – HEC Recognized	The potential use of *Vetiveria zizanioides* for the phytoremediation of antimony, arsenic and their co-contamination.	99(4):511-517	2017	1.41
11.	**Mirza N.**, H. Mubarak, L. Chai, Z. Yang, Q. Mahmood, W. Yong, C. Tang, S. Fahad, W. Nasim.	Toxicological & Environmental Chemistry – HEC Recognized	Constitutional tolerance and chlorophyll fluorescence of *Boehmeria nivea* L in response to the antimony (Sb) and arsenic (As) co-contamination	99 (2): 265-272.	2017	0.634
12.	L. Chai, Y. Wang, Z. Yang, H. Mubarak, **N. Mirza**.	Trans. Nonferrous Met. Soc. China	Physiological characteristics of *Ficus tikoua* under antimony stress.	27(2017) 939−945	2017	1.34
13.	Mubarak H., **N. Mirza***, Hashmi M.Z.	Springer, Cham (Book Chapter)	Recent Advances in Methods for the Detection of Antibiotics and Antibiotics Resistance Genes in Soil.	vol 51, pp 233-251	2017	….
14.	Hasnain A., Nasim W., Mubarak H., **Mirza N.**, et al.	Springer, Cham (Book Chapter)	Antibiotics Resistance Genes.	vol 51, pp 19-37.	2017	…..
15.	Hashmi M.Z., W. Nasim, H. Mubarak, **Mirza N**., et al.	Springer, Cham (Book Chapter)	Management and Regulation of Antibiotics and Antibiotics Resistance Genes in Soils.	vol 51, pp 391-403	2017	…..
16.	L. Chai, H. Mubarak, Z. Yang, W. Yong, C. Tang, **N. Mirza***.	Environmental Science and Pollution Research.	Growth, photosynthesis and defense mechanism of antimony (Sb)-contaminated Boehmeria nivea L.	23(8):7470-81	2016	2.76
17.	H. Mubarak, **N. Mirza**, L. Chai, Z. Yang, W. Yong, C. Tang, Q.	BioMed Research International.	Biochemical and metabolic changes in arsenic contaminated *Boehmeria nivea* L.	Volume 2016 (2016),	2016	2.583

	Mahmood, A. Pervez, U. Farooq, S. Fahad, W. Nasim, K.H.M Siddique.			Article ID 1423828, 8 pages.		
18.	S. Shaheen, Q. Mahmood*, A. Pervez, N. **Mirza**, Z. A. Bhatti, T. Hayat, S. S. Meryem, F. Ullah.	International Journal of Environmental Science and Technology.	Chromium uptake by giant reed under rhizobacterial inhibition.	13:1581–1590.	2016	2.037
19.	Bibi, A., U. Farooq*, S. Naz, A. Khan, S. Khan, R. Sarwar, Q. Mahmood, A. Alam, **N. Mirza.**	Int J Phytoremediation.	Phytoextraction of Hg by parsley (*Petroselinum crispum*) and its growth responses.	18(4):354-7.	2016	2.085
20.	H. Mubarak, L. Chai, **N. Mirza**, Z. Yang, A. Pervez, M. Tariq, S. Shaheen and Q. Mahmood*.	Toxicological and Environmental Chemistry.	Antimony (Sb) – pollution and removal techniques - critical assessment of technologies.	Volume 97, Issue 10, 2015. Pp. 1296-1318	2015	0.634
21.	Mahmood. Q*., **N. Mirza**, S. Shaheen.	A.A. Ansari et al. (eds.), Phytoremediation. (Book Chapter)	Phytoremediation Using Algae and Macrophytes: 1.	Pp. 265-289	2015	….
22.	Hussani Mubarak, Li-Yuan Chai, Zhi-Hui Yang, Chong-Jian Tang, Wang Yong, **Nosheen Mirza.**	13th International Symposium on East Asian Resources Recycling Technology. Thailand 1st – 4th November 2015	*Boehmeria nivea* L. for Ecological Restoration of Arsenic (As) Polluted Areas.	EARTH 2015-149-158.	2015	…..
23.	**Mirza, N**., A. Pervez, Q. Mahmood, M. M. Shah, and S. Sultan.	The Scientific World Journal	Plants as useful vectors to reduce environmental toxic arsenic content.	Volume 2014, Article ID 921581, 11 pages	2014	2.00
24.	Bibi. A., U. Farooq, **N. Mirza**, A. Khan, R. Sarwar, A. Alam, and Q. Mahmood.	Toxicological & Environmental Chemistry.	Excessive chromium may cause dietary toxicity in parsley (*Petroselinum crispum*).	Volume 96, 2014 - Issue 2. 287-295	2014	0.634
25.	Naz, S., U. Farooq, A. Khan, S. Khan, R. Sarwar, and **N. Mirza**.	Chem. Soc. of Pak.	Physiochemical Screening and Antimicrobial Potential of *Otostegia limbata* Benth.	36, 4, 683-686	2014	1.30
26.	Khan, S., U. Farooq, A. Khan, S. Naz, R. Sarwar, and **N. Mirza**.	Chem. Soc. of Pak.	Antimicrobial Potential and Physio-chemical Analysis of Polygonum barbatum L.	36, 4, 687-690	2014	1.30
27.	Q. Khan, F. Akhtar, M. Jamil, O. Sayal, **N. Mirza**, H. Mubarak.	Eurasian Journal of Soil Science	Studies on different concentration of lead (Pb) and sewage water on Pb uptake and growth of radish (*Raphanus sativus*).	3 (2014) 138 – 143	2014	……
28.	**Mirza, N.,** A. Pervez, Q. Mahmood, M. M. Shah, and M. N. Shafqat.	Ecological Engineering	Ecological restoration of arsenic contaminated soil by Arundo donax L.	37: 1949–1956	2011	3.106
29.	**Mirza, N.,** Q. Mahmood, A. Pervez, R. Ahmad, R. Farooq, M. M. Shah, and M. R. Azim.	Bioresource Technology	Phytoremediation potential of *Arundo donax* L in arsenic contaminated synthetic wastewater.	101: 5815–5819	2010	4.98
30.	**Mirza, N*.,** A. Pervez, Q. Mahmood, and S. S. Ahmed.	World App. Sci. J.	Phytoremediation of arsenic (As) & Mercury (Hg) Contaminated Soil	8(1): 113-118.	2010	……
31.	Pervez. A., S. Shahbaz, M. M. Shah, Q. Mahmood, and **N. Mirza.**	World App. Sci. J.	Assessing bioaccumulation of heavy metals in sporocarp of *Pleurotus ostreatus*	Vol. 7. (12). 1498-1503	2009	…….
32.	**Mirza N.**	COMSATS University Islamabad, Abbottabad Campus.	Effect of trace elements (Zn, Mn and Al) on soil pH, Zn and Manganese concentration	ESDev-2005 International Conference on 26-28 July, 2005,	2005	……

INSTRUMENTAL SKILL:

- Expert of TLC
- Expert of Column Chromatography
- Expert of TOC (total organic carbon)
- Atomic Absorption
- HPLC
- GC

RESEARCH WORK:

- **2014-2016: Post-Doctoral Fellowship,** Institute of Environmental Engineering, School of Metallurgy and Environment, Central South University, Changsha, Hunan, P.R. China, 410083, Office No: 122, Off Tel No: 00-86-731- 88836804
- **2005-2013 MS leading PhD:** PhD on Phytoextraction of Arsenic from contaminated Soil Using Local Plant, *Arundo donax* L.
- **2008-2010:** Research Project on Phytoremediation (Phytoextraction) of Arsenic Using Indigenous Wild Species (*Arundo donax)* Like *Elshotzia argii* and *Sedium alfredii*
- **2005-2007 MS:** Phytoremedial Removal of Heavy Metals from Soil and Water as MS research.
- **2003 M.Sc. (Hons) Thesis:** Effect of trace elements (Zn, Mn & Al) on growth and yield of mature tea bushes Mansehra Pakistan.
- **2001 B.Sc. (Hons):** Have carried out Lab experiment on extraction of exchangeable – K from 15 different soil samples using sodium acetate & ammonium acetate Haripur Pakistan.
- Worked on Wastewater Treatment Project.
- Participated in Polio Vaccince Monitoring conducted by WHO`s in the surroundings of Abbottabad.

RESEARCH PROJECTS:

- Hussani Mibarak and **Nosheen Mirza**, "Heavy metal and water quality monitoring of Manka canal, DG Khan city to evaluate their effects on the adjacent irrigated agricultural fields". HEC Start-up Grant. (0.5 million). To be completed in 2018.
- **Nosheen Mirza** and Arshid Pervez, "Phytoremediation of heavy metals by pilot scale cultivation of *Arundo donax* L". HEC Start-up Grant. (0.5 million). To be completed in 2015.
- **Nosheen Mirza** and Qaisar Mahmood, Effects of Arsenic Phytoextraction on the Ultrastructure and Physiology of *Arundo donax* L. CIIT Research Grant (0.2 million) Completed in Feb, 2010-Feb, 2011.

CERTIFICATES AND HONORS:

- Workshop on "**Literature Searching and Organizing Using Emerging Technologies**" held at Ghazi University, D.G Khan (7.12.2018)
- Workshop on "**Innovations in Agriculture**" held at Ghazi University, D.G Khan (17.10.2018)
- Staff Orientation Workshop on "**Right Based Participatory Development**" held at HRD center, SUNGI Development Foundation. (04-13 October, 04).
- Staff Orientation Workshop on *"***Teacher`s Training for Class and Course Management in Semester System**" held at COMSATS Institute of Information Technology (20005).
- **Familiarity with New Participatory Approaches:** Familiar and have been implementing new participatory approaches like Participatory Technology Development and Farmer's Field School in agriculture and livestock sectors in the CBRM Project area.

COURSES TAUGHT:

- Soil Science
- Natural Resource Management
- Environmental Economics
- Introduction to Chemistry
- Ecology
- Introduction to Biology
- Industrial Microbiology
- Analytical Techniques

MAJOR SUBJECTS OF SOIL & ENVIRONMENTAL SCIENCES:

- Agriculture Chemistry
- Environmental Chemistry
- Soil Microbiology and Biochemistry
- Soil Science
- Plant Molecular Biology
- Biochemistry
- Soil Genesis and Classification
- Soil Classification
- Soil Fertility
- Soil Chemistry

MAJOR SUBJECTS OF ENVIRONMENTAL SCIENCES:

- Environmental Economics
- Soil, Water and Plant Relation
- Soil Physics
- Soil Microbiology
- Waste Management
- Soil and Water Conservation
- Environmental Biophysics
- Basic Environment
- Environment and Development Natural Resource Management
- Energy Resources
- Environmental Economics
- Basic Analytical Techniques
- Instrumental Methods of Soil Plant & Water Analysis
- Waste Water Treatment
- Water Quality for Agriculture
- Earth Sciences Basics
- Conservation of Soil & Environment
- Environmental Impact Assessment

RESEARCH INTERESTS:

My academic background and my professional experience are stand equally between a scientific interest at the way natural systems work at all scales, and a creative eagerness to explore the design potential of those same natural systems, again at all scales. As a result, my research interests are wide and reflect these personal interests, and range from pure ecological studies through to applied soil and wastewater treatment, stressed physiology and phytoremediation.
I have several research themes as my previous studies are multidisciplinary i.e., agriculture, environmental and soil sciences, hence my research areas are:

- Stress Physiology, Plant Systematic
- Molecular and Cell biology
- Ecology – Conservation Biology, Biodiversity
- Biochemistry

Due to increasing environmental pollution, especially due to anthropogenic intrusions, various environmental stresses such as water logging, drought, soil fertility, salinity, sodicity, global warming, UV exposure etc pose serious adverse effects on flora and fauna. These stresses induce changes in the cellular biochemistry, anatomy, physiology and ultimately in the genetic make-up of those organisms. As biological effects of such stresses, are numerous and complex hence, cause visible as well as invisible effects. The ability of organism to overcome the effect of those stress, sustaining its productivity enables it as survivor. Thus, special emphasis of my research interests involve:

- Investigate the effects of any imposed stress on different plant species.
- Study the mechanism of stress tolerance in plants, factors affecting their resistance for stresses and understand their defense mechanism, using different instruments and variety of techniques.

- Morphological and physiological studies of native flaura and ultrastructure changes in plant parts, through estimating antioxidant enzymes, lipid peroxidation, protein, ascorbic acid and glutathione contents. Identify both the active and passive components for resistance development
- I am also interested in studying cellular, molecular mechanisms and genes involved in defense mechanism.

Firstly, such studies will help in understanding and identifying best suited plant species, could be a contribution in coping-up the anthropogenic climatic changes and would help the long term survival of life. Secondly, it will not only improve my knowledge and skills but will also equip my research capacity.

As water scarcity is the growing problem of World and especially of third World countries, thus believing the concept of 3 R`s i.e., recycle reduce and reuse of waste water I am also interested in

- Wastewater Treatment Technologies
- Solid Waste Management and Disposal
- Improving Electrolytic Waste water treatment
- Water Quality, Special Reference with Developing Countries.
- Phytoremediation and Phytoextraction of Toxic Metals (Hg & As)
- Phytoextraction of Arsenic Using Indigenous Wild Species.

ORGANISED CONFERENCES:

- **25-27 August, 2013:** Worked as team member in organizing an International Conference ESDev-2013 International Conference August, 2013, organised by Environmental Sciences Department, COMSATS Institute of Information Technology Abbottabad.
- **24-26 July, 2011:** Worked as team member in organizing an International Conference ESDev-2011 International Conference July, 2011, organised by Environmental Sciences Department, COMSATS Institute of Information Technology Abbottabad.
- **16-18 August, 2009:** Worked as team member in organizing an International Conference ESDev-2009 International Conference August, 2009, organised by Environmental Sciences Department, COMSATS Institute of Information Technology Abbottabad.
- **26-28 August, 2007:** Worked as team member in organizing an International Conference ESDev-2007 International Conference August, 2007, organised by Environmental Sciences Department, COMSATS Institute of Information Technology Abbottabad.
- **2006:** International Conference on Technology based Development: Strategies and options for Pakistan, held in Islamabad Pakistan
- **26-28 June, 2005:** Worked as team member in organizing an International Conference ESDev-2005 International Conference on 26-28 June, 2005, organised by Environmental Sciences Department, COMSATS Institute of Information Technology Abbottabad.

PARTICIPATED CONFERENCES:

- **2023: Oral Presentation: Mirza, N.**, T. Noor, H. Mubarak, Q. M. Ismail, S. Yasin, M. Waseem, and M.A Shah. 2023. Effect of Different Media Cultivation on the Growth and Yield of Vinca rosea (*Catharanthus roseus*). 1st SMIU GLOBAL RESEARCH CONGRESS.Reshaping Society through Innovation and sustainability. Sindh Madressatul Islam University, Karachi (8-9th March 2023).
- **2023: Oral Presentation: Mirza, N**., Q.M. Ismail, H. Mubarak, M. Waseem, S. Yasin, T. Noor, and M.A. Shah. 2023. Effect of Agricultural and Non-Agricultural Wastes as Mulching Materials, on the Growth of *Ocimum Basilicum*, in Arid/Semi-Arid Region. 1st SMIU GLOBAL RESEARCH CONGRESS.Reshaping Society through Innovation and sustainability. Sindh Madressatul Islam University, Karachi (8-9th March 2023).

- **2023: Poster Presentation: Mirza, N**., S.N. Alam, H. Mubarak, M.A. Shah, S. Yasin, M.A. Qayyum, Q.M. Ismail. 2023. Status of heavy metal contamination of dumping site - Salhad Landfill, Abbottabad, Pakistan. 2nd International Conference on Climate change and Environment (ICCC & E) (11-13th January 2023).
- **2023: Poster Presentation: Mirza, N.**, Q.M. Ismail, H. Mubarak, S. Yasin, and M. Waseem.2023. Potential of agricultural and non agricultural wastes derived biochars – As growth media. 2nd International Conference on Climate change and Environment (ICCC & E) (11-13th January 2023).
- **2023: Poster Presentation:** S. Yasin, B. Ahmad, M.A. Shehzad. **N. Mirza**, S. Bashir and S. Bashir. 2023. Effects of organic amendments on heavy metal mobility in soil and translocation to leafy vegetable Spinach *(Spinacia oleracea* L.*)*. 2nd International Conference on Climate change and Environment (ICCC & E) (11-13th January 2023).
- **2006:** Abstract accepted and published in 12 All Pakistan Conference, December 4-6, 2006. Department of Geology, University of Punjab, Quaid-e-Azam Campus. Lahore.
- **26-28 June, 2005 :** Presented a research paper on Effect of trace elements (Zn, Mn and Al) on soil pH, Zn and Manganese concentration, in an International Conference ESDev-2005 International Conference on 26-28 June, 2005, organised by Environmental Sciences Department, COMSATS Institute of Information Technology Abbottabad.

COMPUTER SKILLS:

- Operating systems Windows 98/ME/2000/XP
- Capable of doing file management
- Presentation & publishing
- MS Word professional
- Internet

LANGUAGES:

- English
- Urdu
- Hindko
- Punjabi

LIST OF GRADUATE THESIS SUPERVISED:

Sr. #	Name	Year	Research Title
1	Shoaib Nawaz	2017-18	Silicon Amendments for Metal Remediation of Soil by *Arundo donax* L.”.
2	Muhammad Naeem Khan	2018-19	Synthesis and Application of Ag-Biochar Composite for Sono-adsorption of Phenol
3	Aiman Mushtaq	2020-21	Soil Amendments Effects on Growth and Yield of Sunflower in Salt Affected Sewage Water Irrigated Soils
4	Ali Muhammad	2021-22	Study of Comparative Effects o0f Organic Farming on the Growth and Yield of Wheat Crop

REFERENCES:

- **Dr. Arshid Pervez.** (Ex-Director, Professor)
  COMSATS University Islamabad (CUI), Abbottabad Campus, K.P.K, Pakistan.
  Ph: +92995383591-7, +923145043600. Email: pervez@cuiatd.edu.pk.

- **Dr. Li Yuan Chai.** (Professor / Dean)
  Department of Metallurgical & Environmental Engineering, School of Metallurgy and Environment, Central South University, Changsha 410083, Hunan, China
  Ph: +86 731 88830875, Email: chailiyuan@csu.edu.cn

- **Dr. Muhammad Jamil Khan.** (Professor / Chairman)
  Department of Soil and Environmental Sciences, Gomal University Dera Ismail Khan 29050, KPK, Pakistan
  Ph: +92966750424-8 Ext 3068, +92 3005792248, Email: jamil@gu.edu.pk