

# CURRICULUM VITAE

## DR. FAZAL HADI



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**PRESENT POSITION:** Associate Professor of Biotechnology (BPS 20)

**Chairman,** Department of Biotechnology, University of Malakand  
(Ex-HoD Department of Biotechnology/Bot/Zoo (Aug 2011-Sep 2013))

**Mailing:** Room 049W, Department of Biotechnology, University of Malakand,  
Chakdara 18800, Dir (Lower), Khyber Pakhtunkhwa, Pakistan

## **EDUCATION**

Degree/ Certificate	Year	Division	Subject	University/Board
Postdoc	2018-19	----	Phytotechnology	Sun Yat Sen University, China
PhD	2010	----	Biotechnology/Plant Molecular Physiology	University of Plymouth (UK)
MPhil	2004	1 <sup>st</sup>	Biotechnology/Phytotechnology	Quaid-i-Azam University
MSc	2001	1 <sup>st</sup>	Botany	University of Peshawar
BSc	1998	1 <sup>st</sup>	Bot. Zoo. Chem.	University of Peshawar
FSc	1996	1 <sup>st</sup>	Biology (Pre-medical)	BISE Swat Pakistan
SSC	1994	1 <sup>st</sup>	Science	BISE Swat Pakistan

## **AWARDS/ACHIEVEMENTS**

- Elsevier International Award for the Highly Cited Research Paper of the year 2016.
- Best researcher Award of the year 2015-16 of the faculty of biological sciences, University of Malakand through minister of higher education Khyber Pakhtunkhwa.
- Research productivity award of the year 2015 of the University of Malakand, awarded through Iftikhar Hussain Shah ex-governor and chancellor of the University of Malakand.
- Supervised 04 PhDs, Co-supervised 01 PhD, and Supervised 20 MPhil Scholars
- HEC travel grant to USA twice (speaker in the conference 2011 and 2015)
- Research Productivity Award, Pak Council for Science and Technology (PCST, 2011-12)
- HEC/FDP scholarship for Ph.D studies abroad 2007-2010 (Fully funded)
- HEC approved supervisor
- Technical member Biotech advisory committee Directorate of Science and Technology, Khyber Pakhtunkhwa Pakistan.

## **PROFESSIONAL RESPONSIBILITIES**

- a. Elected member of Syndicate University of Malakand (2020-todate )
- b. Chairman, Department of Biotechnology UoM, (2019-todate)
- c. MPhil/PhD program coordinator, Department of Biotechnology, UoM (2015-)
- d. HoD, Department of Biotechnology/Botany/Zoo (Aug 2011-Sep 2013).
- e. Member Graduate Studies committee, Department of Biotechnology, UoM (2014-)
- f. Member Board of Faculty, Faculty of Biological Science, UoM (2016- )
- g. Member Graduate Studies Committee, Centre of Biotechnology, University of Swat(2012-)

- h. Member selection committee, University of swat, (2014)
- i. Member Quality Enhancement Cell committee for evaluation of MPhil/PhD program in Biotechnology, University of Malakand (2016- )

**COUNTRIES VISITED:** UK, Austria, USA, KSA, China

**INTERNATIONAL LINKAGES:**

1. Michigan State University, Michigan USA (Material transfer agreement Plant Research laboratory)

**TEACHING EXPERIENCE:**

S.No	Institution	Position	From-to
1	Department of Biotechnology, University of Malakand	Associate Professor	12/02/2018 – To date
2	Department of Biotechnology, University of Malakand	Assistant Professor	30/06/2011 – 11/02/2018
3	Department of Biotechnology, University of Malakand	Lecturer	01/09/2005 - 29/06/2011
4	Islamabad College for boys G-6/3	Lecturer	01/09/2004 - 21/04/2005

**TEACHING INTEREST:**

- Phyto/Bioremediation
- Environmental Biotechnology
- Plant Biotechnology
- Cell Biology
- Molecular Physiology of Abiotic Stresses

**RESEARCH INTEREST:**

Phytotechnology, Molecular Biology and Physiology, Abiotic Stresses (metals, drought, frost and salt stress), Plant Biotechnology, Transcriptomics, CBFomics.

**RESEARCH GRANTS/PROJECTS (FUNDING STATUS) COMPLETED**

1. Nano Biofortification of Wheat grain with iron oxide nanoparticles (UoM ORIC funded 2022-23 ongoing)
2. Investigation for the Development of Phytoextraction Technology for remediation of heavy metal-contaminated soil (PSF funded under Pak-US natural science linkage program, Completed in Dec 2015)
3. Development of an Effective Phytoextraction Technology for metal contaminated soils restoration (Directorate of Science and Technology, Govt of KPK, Completed in 2014)
4. Phytoremediation of heavy metal-contaminated soil and water by selected plant species (HEC funded under indigenous PhD scholarship scheme, Completed 2014)
5. Identification and expression analysis of CBF/DREB1 and COR15 genes along with free proline level in mutants of *Brassica oleracea var botrytis* in relation to frost resistance (UoM/HEC, 2009-10 completed)

## **PROFESSIONAL MEMBERSHIP:**

1. Chair Environmental Biotechnology Division, Asian Federation of Biotechnology AFOB-Pak.
2. Technical member Biotech Advisory Committee Directorate of Science and Technology, Khyber Pakhtunkhwa Pakistan.(2012-todate)
3. International Phytotechnology Society USA (IPS) 2010-
4. Society for Experimental Biology UK (SEB) 2009-

## **PHD SCHOLARS SUPERVISED**

<i>Name of Scholar</i>	<i>Thesis examiners from</i>	<i>Degree Year</i>	<i>Current status</i>
<b>(1) Nasir Ali</b> <i>(Physiological and Molecular Characteristics of heavy metal uptake and accumulation in selected plant species for development of phytoextraction technology)</i>	1. Canada 2. UK 3. QAU Islamabad	2016	Assistant Professor in University (Private sector)
<b>(2) Amin Ullah Jan</b> <i>(Characterization of dehydration stress tolerance in sunflower)</i>	1. Spain 2. UK 3.COMSATS, Abbottabad	2016	Assistant Professor in University (Public Sector)
<b>(3) Ayaz Ahmad</b> <i>(Phytoremediation of heavy metal contaminated soil and water by selected plant species)</i>	1. New Zealand 2. USA 3. QAU Islamabad	2015	Subject Specialist Education Department Khyber Pakhtunkhwa.
<b>4. Siraj Ahmad</b> <i>(Co-Supervised)</i>	1. USA 2. Turkey 3. QAU Islamabad	2016	Professor Education Department Khyber Pakhtunkhwa
<b>5.Fazal Hussain</b>	PhD thesis submitted, .		

## **MPHIL SCHOLARS SUPERVISED**

S.No	Name of Scholars	Degree awarded year	S.No	Name of Scholars	Degree awarded year
1	Nasir Ali	2013	13	Chand Bibi	2017
2	Rizwan Bibi	2014	14	Abid Hamid	2018
3	Sana Ullah	2014	15	Jamal Khan	2018
4	Sikandar	2014	16	Farman ali	2018
5	Rafi Ullah	2015	17	Ikram	2019
6	Raza Ullah	2015	18	Adnan	2020
7	Nazish Aman	2015	19	Nasr Ullah	2013Co-Supervised
8	Fazal Mabood	2015	20	Zakir	2014Co-Supervised
9	Shakeel Ahmad	2015	21	Zain Ul Arifen	2015Co-Supervised
10	Tariq Aziz	2016	22	Rizwan	2021
11	Abid Ali	2016	23	Shahid	2021
12	Haider Ali	2017			

**BS SUPERVISION:** Supervised 60 students.

**REVIEWER OF INTERNATIONAL JOURNALS:**

## **PROFESSIONAL TRAININGS**

**2014:** Training course on research patenting (20<sup>th</sup> to 22<sup>nd</sup> may 2014), organized by Directorate of Science and Technology in Collaboration with IPO-Pakistan in Academy of Rural development (PARAD) Peshawar.

**2009:** Laboratory based teaching/demonstration (ENV5101), theory and practice from the University of Plymouth UK.

**2008:** Student Associate Scheme (SAS) training (3days instructions from education experts and 15 days practice. University of Plymouth UK.


**2007:** General Teaching Associate Course (GTA), theory and practice, from the University of Plymouth UK

**2009:** Three days training course (South west Universities GRAD School) at Buckland Hall Conference and Retreat centre Bwlch Brecon. Wales, 02nd-05th June 2009. Course Director: Paul Toombs. This training course included contents to develop the following skills. (a) Personal effectiveness (b) Communication skills (c) Networking and team working (d) Career management

**2007:** Research Skills and Methods (BIO5124), University of Plymouth

## **CONFERENCES, WORKSHOPS, SEMINARS, PUBLIC LECTURES ATTENDED**

### **INTERNATIONAL CONFERENCES:**

1. 11<sup>th</sup> Sino French workshop; Innovations for the Circular economy by Recycling of secondary resources: 29<sup>th</sup> Oct- 2<sup>nd</sup> Nov, 2018, Sun yat Sen University, China, attended as invited speaker
2. 13<sup>th</sup> international phytotechnologies conference, September 27-30, 2015, at the Manhatta Convention Cente r in Manhattan, Kansas. USA. Theme of the conference, Phytotechnologie.. for Sustainable Development. Attended as speaker.  5/5/2021
3. Eighth International Phytotechnologies Conference: Sep.13-16, 2011, Doubletree Inn, Portland, Oregon, USA. Attended as speaker.
4. A public lecture by John Craig Venter (the president of J. Craig Venter institute, Rockville, MD, and San Diego, CA, USA. Topic: Genomics; From reading to writing the code. Robbins Lecture theatre, Plymouth, England. 21/05/2009.
5. Training workshop for 3 days; south west universities GRAD School at Buckland Hall Conference and Retreat centre Bwlch Brecon. Wales, UK, 02nd-05th June 2009.
6. Workshop on Research and enterprise, 20/01/2009, Rolle Building 002/003, University of Plymouth.
7. Workshop on intellectual property rights, 27/01/2009, Rolle Building 002/003, University of Plymouth.
8. Seminar on „molecular laboratory“ 03/03/2009. University of Plymouth.

9. International conference „Plant abiotic stress tolerance“ 8-12 February 2009, Presentation of some part of PhD work. University of Vienna Austria.
10. Video conference. „Conservatives and environment“ 23/02/2009. Simultaneous in Universities of Exeter, Bristol, Plymouth and Bath. UK
11. Conference on Agrivision (agriculture business) 2020. 03/04/2009. Royal Cornwall showground UK.
12. Vice Chancellor’s Research and Innovation Conference, University of Plymouth UK. April 28, 2008.
13. Workshop on „Plagiarism – Your words or other people? (May 13, 2008)
14. Workshop on Endnote Bibliographic Referencing for Beginners (May 02, 2008)
15. Workshop on Preparing Effective Poster Presentations (May 7, 2008)
16. Workshop on „Impact Factor: Getting Published in Scientific Research (May 16,2008)
17. Workshop on molecular biology techniques, organized by Alpha Laboratories & Biohit at School of Biological Sciences, Plymouth University, May 21, 2008.
18. Workshop on Project and time management “Good project management and supervision is crucial and not optional”! June 06, 2008, UK
19. Workshop on Developing Professional Writing Skills. Jan 31, 2008, UK
20. Workshop on Risk management for research students. Nov 05, 2007.UK
21. Workshop on Research owning and using. Nov 28, 2007, UK.
22. Workshop on ‘Data visualisation“ 11/03/2009. Uni of Plymouth. UK
23. Seminar on Physiology to Microarrays; Crab population response to climate change (temperature stress) “Organized by Marine Science laboratory, Univ. of Plymouth UK, May 30, 2008.
24. International Conference on Environmental Challenges Organized by Department of Environmental Sciences, University of Peshawar (March 11-13, 2004

## **NATIONAL CONFERENCES:**

1. 14th National and 5th International Conference of Botany “Climate change and: Challenges and Opportunities, organized by Pakistan Botanical Society at University of Karachi, Karachi on 15-18 January 2016.
2. National Science Conference: Roadmap of cutting edge technologies. Jan 10-12, 2012. Organized by Pakistan Academy of Science, in Arid Agricultural University Rawalpindi. Attended as a speaker.
3. HEC/UAAR 2nd Workshop on Real Time PCR, July 2012, Department of Biochemistry, PMAS-Arid Agriculture University Rawalpindi.
4. Workshop on Project formulation at Khyber Pakhtunkhwa Agricultural University Peshawar, Feb 8-9, 2012. Organized by Pakistan Science Foundation PSF.

5. Seminar on Biodiversity, Organized by Environmental Biology Lab. Quaid-i-Azam University, Islamabad (22<sup>nd</sup> May 2004) As a speaker in 1<sup>st</sup>
6. Seminar on “Advances in Assisted reproduction techniques” By T.Rahil, Ph.D Scientific Director Alwanado hospital fertility center, San Diego, California. 15-4-2003. Organized by National Academy of Sciences Pakistan.
7. Workshop on “Identification, Maintenance and preservation of Microorganisms” Organized by Microbiology Research Laboratory, Department of Biological Sciences Quaid-I-Azam University Islamabad Pakistan, May 10-12, 2004.
8. National symposium on ‘biotechnology recent advances’ organised by department of biotechnology University of Malakand, Pakistan, 21-24May 2007.

## **PUBLICATIONS**

1. Fazal Mabood, Fazal Hadi, Amin Ullah Jan, Allah Ditta, Ziaul Islam, Manzar H. Siddiqui, Hayssam M. Ali, Ayman E.L. Sabagh (2022). Assessment of Pb and Ni and potential health risks associated with the consumption of vegetables grown on the roadside soils in District swat, Khyber Pakhtunkhwa, Pakistan. *Environmental Monitoring and Assessment*, 194:906.
2. Ahmad, R.; Hadi, F.; Jan, A.U.; Ditta, A. (2022). Straw Incorporation in Contaminated Soil Enhances Drought Tolerance but Simultaneously Increases the Accumulation of Heavy Metals in Rice. *Sustainability*, 14, 10578. <https://doi.org/10.3390/su141710578>
3. Amin Ullah Jan, Fazal Hadi, Allah Ditta, Muhammad suleman, Midrar Ullah (2022). Zinc induced anti-oxidative defense and osmotic adjustments to enhance drought stress tolerance in sunflower (*Helianthus annuus L.*). *Environmental and Experimental Botany*, 193(2022) 104682.
4. Amin Ullah Jan, Fazal Hadi, Abdullah Shah, Allah Ditta, Muhammad asif Nawaz, Muhammad tariq (2021). Plant growth regulators and EDTA improve phytoremediation potential and antioxidant response of *Dysphania ambrosioides (L.) Mosyakin & Clemants* in a Cd-spiked soil. *Environmental Science and Pollution Research* 28(32): 43417-43430.
5. Asghar Khan, Muhammad Saleem Khan, Fazal hadi, Ghulam sadique (2021). Energy-Dispersive X-ray (EDX) fluorescence based analysis of heavy metals in marble powder, paddy soil and rice (*Oriza sativa L.*) with potential health risks in District Malakand, KhyberPakhtunkhwa, Pakistan. *Environmental Pollutants and Bioavailability*, 33(1), 3.1-316.
6. Muhammad Imad, Muhammad Idress, Fazal Hadi, Nazakat Hussain, Zhiyong Zhang (2021). Allelopathic effect of parthenium hysterophorus extract on seed germination and seedling growth of selected eight plants. *Pakistan Journal of Botany*, 53(6): DOI: [http://ds.doi.org/10.30848/PJB2021-6\(9\)](http://ds.doi.org/10.30848/PJB2021-6(9)).
7. Fazal Hussain, Fazal Hadi, Qiu Rongliang (2021). Effects of zinc oxide nanoparticles on antioxidants, chlorophyll contents, and proline in *Persicaria hydropiper L.* and its potential for Pb phytoremediation. *Environmental Science and Pollution Research*. 28(26):34697-34713. (IF 5.190)

8. Fazal Hadi, Ayaz Ahamd and Raza Ullah (2021). Cadmium Phytoextraction Potential of *Ricinus communis* Significantly Increased with Exogenous Application of Growth Regulators and Macronutrients. *Soil and Sediment Contamination: An International Journal*. Published online: 14 Feb 2021. <https://doi.org/10.1080/15320383.2021.1885345> (IF 1.7)
9. Hussain F, Hadi F, Akbar F (2019) Magnesium oxide nanoparticles and thidiazuron enhance phytoaccumulation of lead and antioxidative response in *Raparus sativus* L. *Environmental Science and Pollution Research* 26:30333–30347 (IF 2.91)
10. Ali, N., Hadi, F., and Ali, M. (2019). Growth stage and molybdenum treatment affect cadmium accumulation, antioxidant defence and chlorophyll contents in *Cannabis sativa* plant. *Chemosphere*, 236, 124360. (IF 5.2)
11. Raza Ullah, Fazal Hadi, Shakeel Ahmad, Amin Ullah Jan, Qiu Rongliang 2019. Phytoremediation of Lead and Chromium Contaminated Soil Improves with the Endogenous Phenolics and Proline Production in *Parthenium*, *Cannabis*, *Euphorbia*, and *Rumex* Species. *Water Air Soil Pollution*, 230: 40 (IF= 1.769).
12. Amin Ullah Jan, Fazal Hadi, Fazal Akbar and Abdullah Shah. 2019. Role of potassium, zinc and gibberellic acid in increasing drought stress tolerance in sunflower (*helianthus annuus* L.), *Pak. J. Bot.*, 51(3). (IF 0.9)
13. Nasir Ali and Fazal Hadi, 2018. CBF/DREB transcription factor genes play role in cadmium tolerance and phytoaccumulation in *Ricinus communis* under molybdenum treatments. *Chemosphere*. 208; 425-432. (IF= 5.2)
14. Sana Ullah, Fazal Hadi, Nasir Ali, Sikandar Khan, 2018. Foliar Application of Iron (Fe) Improved the Antioxidant Defense and Cd Accumulation Potential of *Ricinus communis* Under Hydroponic Condition. *Water Air Soil Pollution*.229: 229: 284.(IF= 1.7)
15. Amin Ullah Jan, Fazal Hadi, Alam Zeb, Ziaul Islam, 2018. Identification and quantification of phenolic compounds through reversed phase HPLC-DAD method in sunflower seeds under various treatments of potassium nitrate, zinc sulphate and gibberellic acid. *Journal of Food Measurement and Characterization*, 12: 269–277. (IF- 1.18)
16. Amin Ullah Jan, Fazal Hadi, Midrarullah, Muhammad Asif Nawaz, Khaista Rahman. 2017. Potassium and zinc increase tolerance to salt stress in wheat (*Triticum aestivum* L.). *Plant Physiology and Biochemistry* 116: 139-149. (IF. 2.7)
17. Fazal Hadi, Nasir Ali and Michael Paul Fuller, 2016. Molybdenum (Mo) increases endogenous phenolics, proline and photosynthetic pigments and the phytoremediation potential of the industrially important plant *Ricinus communis* L. for removal of cadmium from contaminated soil. *Environmental Science and Pollution* 23: 20408-20430. (IF 2.97)
18. A Ahmad, Fazal Hadi, Nasir Ali and Amin Ullah, 2016. Enhanced phytoremediation of cadmium polluted water through two aquatic plants *Veronica anagallis-aquatica* and *Epilobium laxum*. *Environmental Science and Pollution*, 23: 17715-17729 (IF 2.97)
19. A Ahmad, Fazal Hadi and Nasir Ali, 2015. Effective Phytoextraction of Cadmium (Cd) with Increasing Concentration of Total Phenolics and Free Proline in *Cannabis sativa* (L) Plant Under Various Treatments of Fertilizers, Plant Growth Regulators and Sodium Salt, *International Journal of Phytoremediation*, 17: 56-65.(IF 1.46)

20. Nasir Ali<sup>1</sup> and Fazal Hadi, **2015**, Phytoremediation of cadmium improved with the high production of endogenous phenolics and free proline contents in *Parthenium hysterophorus* plant treated exogenously with plant growth regulator and chelating agent, *Environmental Science and Pollution*, 22: 13305–13318, (IF 2.828)
21. Fazal Hadi, Nasir Ali and A Ahmad, 2014. Enhanced Phytoremediation of Cadmium-Contaminated Soil by *Parthenium hysterophorus* Plant: Effect of Gibberellic Acid (GA<sub>3</sub>) and Synthetic Chelator, Alone and in Combinations. *Bioremediation Journal*. 18: 46-55 (IF 0.5).
22. Nazish Aman, Fazal Hadi, Shahid Akbar Khalil, 2013. Efficient regeneration for enhanced steviol glycosides production in *Stevia rebaudiana* (Bertoni), *Comptes Rendus Biologies*, 336: 486–492.
23. Fazal Hadi, Asghari Bano and Michael P. Fuller, 2013. Augmented Phytoextraction of Lead (Pb<sup>2+</sup>)-Polluted Soils: A Comparative Study of the Effectiveness of Plant Growth Regulators, EDTA, and Plant Growth-Promoting Rhizobacteria. *Bioremediation Journal*. 17: 124-130 (IF 0.5).
24. Irfan Ali, Fazal Hadi, and Asghari Bano, 2012, Microbial assisted phytoextraction of metals and growth of soybean (*Glycine max L.*) on industrial waste water contaminated soil. *Pakistan Journal of Botany*, 44: 1593-1599 (IF 0.872)
25. Fazal Hadi, Martyn Gilpin and Michael P. Fuller, 2011. Identification and expression analysis of CBF/DREB1 and COR15 genes in mutants of *Brassica oleracea var. botrytis* with enhanced proline production and frost resistance. *Plant Physiology and Biochemistry*, 49: 1323-1332. (IF 2.838)
26. Fazal Hadi, Asghari Bano and Michael P. Fuller, 2010. The improved phytoextraction of lead (Pb) and the growth of maize (*Zea mays L.*): the role of plant growth regulators (GA<sub>3</sub> and IAA) and EDTA alone and in combinations. *Chemosphere*. 80: 457-482. (IF 3.155).
27. Fazal Hadi and Asghari Bano, 2010. Effect of Diazotrophs (*Rhizobium* and *Azotobacter*) on growth of Maize (*Zea mays L.*) and accumulation of lead (Pb) in different plant parts. *Pakistan Journal of Botany*, 42: 4363-4370. (IF 0.947).
28. Fazal Hadi and Michael Paul Fuller, 2010. Effect of the cold acclimation on proline and protein contents in Cauliflower clones. *Proceedings of the Nutrition Society*. 69 (OCE4), E332. (IF 4.6)
29. Fazal Hadi, and Asghari Bano, 2009. Utilization of *Parthenium hysterophorus* for the remediation of lead-contaminated soil. *Weed Biology and Management*. 9307–314. (IF 0.743)
30. Amin Ullah Jan, Fazal Hadi, Midrarullah, Ayaz Ahmad, Khaista Rahman. 2017 Role of CBF/DREB Gene Expression in Abiotic Stress Tolerance. A Review, *Int J Hort Agric*. 2(1):1-12.
31. Fazal Hadi and Michael P. Fuller, 2013. Chemically Induced Mutants of *Brassica oleracea var. botrytis* Maintained Stable Resistance to Drought and Salt Stress after Regeneration and Micropropagation, *American Journal of Plant Sciences*, 4: 498-507 (IF 1.04)
32. Fazal Hadi, Muhammad Ayaz, Sartaj, 2014. Comparative effect of polyethylene glycol and mannitol induced drought on growth (in vitro) of canola (*Brassica napus*), cauliflower (*Brassica oleracea*) and tomato (*Lycopersicon esculentum*) seedlings, *International Journal of Biosciences*, 4: 34-41 (IF 0.553)
33. Amir Wahid, Fazal Hadi, Amin Ullah Jan, 2014, In vitro assessment of tomato (*Lycopersicon esculentum*) and Cauliflower (*Brassica oleracea*) seedlings growth and proline production under salt stress. *International Journal of Biosciences*. 4: 109-115 (IF 0.553)



34. Fazal Hadi, Sana Ilah, Fazal Hussain, 2014. Nitrogen fertilizer and EDTA effect on Cannabis sativa growth and Phytoextraction of heavy metals (Cu and Zn) contaminated soil. International Journal of Agronomy and Agricultural Research. 4: 85-90 (IF 1.75)
35. Fazal Hadi, A Ahmad and Nasir Ali, 2014. Cadmium (Cd) Removal from Saline Water by *Veronica anagallis* and *Epilobium laxum* Plants in Hydroponic System. Agricultural Sciences. 5: 935-944 (IF 0.73)
36. Fazal Hadi, Fazal Hussain, Muhammad Hussain, 2014. Phytoextraction of Pb and Cd; the effect of Urea and EDTA on Cannabis sativa growth under metals stress. International Journal of Agronomy and Agricultural Research 5: 30-39 (IF 1.75)
37. Amin Ullah Jan and Fazal Hadi, 2016. Determination of oil content and fatty acids profile in sunflower seeds through near infra-red spectroscopy under various treatments of potassium nitrate, zinc sulphate and gibberellic acid. International Journal of Biosciences. 9: 22-31 (IF 0.553)
38. S Ahmad, N Khan, Fazal Hadi, 2016. The effect of different soil and shade regime on germination and growth pattern of *Dodonaea viscosa* (Linn.) Jacq., in Malakand division. International Journal of Biosciences.9: 169-177 (IF 0.553)
39. S Ahmad, N Khan, Fazal Hadi, 2016. Structure and natural dynamics of *Dodonaea viscosa* communities in Malakand division Pakistan. Journal of Biodiversity and Environmental Sciences, 9: 257-273 (IF 1.35)
40. Nadeem Ullah, Fazal Hadi, Farman Ullah, Ayaz Ahmad, Nasir Ali, Amin Ullah Jan. 2017. Analysis of heavy metals (Pb and Cd) in soil, peach fruit and its accumulation in human blood. International Journal of Agronomy and Agricultural Research (IJAAR). 10(4): 24-32.
41. Ayaz Ahmad, Fazal Hadi, Habib Ahmad, Amin Ullah Jan, Khaista Rahman, Siraj Ahmad. 2017. Salinity in soil increased cadmium uptake and accumulation potential of two terrestrial plants. International Journal of Biosciences. 10(3): 132-142. (IF 0.553)
42. Fazal Hadi, Muhammad Zain Ul Arifeen, Tariq Aziz, 2015. Phytoremediation of Cadmium by *Ricinus communis* L. in Hydroponic Condition. American-Eurasian J. Agric. & Environ. Sci. 1155-1162 (IF 0.2)
43. Amin Ullah Jan and Fazal Hadi, 2015. Potassium, Zinc and Gibberellic Acid Foliar Application Enhanced Salinity Stress Tolerance, Proline and Total Phenolic Contents in Sunflower (*Helianthus annuus* L.). American-Eurasian J. Agric. & Environ. Sci, 1835-1844 (IF 0.2)
44. A. Ahmad, I. A. Khan, A. U. Jan, Fazal. Hadi, 2014. Analysis of genetic variation in Pinus species using SDS-page. International Journal of Biosciences. 4: 140-147 (IF 0.553)
45. Fazal Hadi and Tariq Aziz, 2015. A Mini Review on Lead (Pb) Toxicity in Plants, 6(2) doi:10.5296/jbls.v6i2.7152.
46. Zia M, . Fazal Hadi, Akbar, H. Akbar, F, 2008. 'Physiochemical and Molecular Analysis of Brassica napus seeds of different varieties'. Asian J. Plant Sci, 7: 85-89.
47. Tariq, M. Ali, G. Fazal Hadi, Ahmed, S., 2008. 'Callus induction and invitro Plant regeneration of rice (*Oryza sativa* L.) under various conditions. Pak. J. Biol. Sci, 11: 255-259.
48. Ali, G. Fazal Hadi, Ali, Z. Tariq, M, 2007. 'Callus induction and in-vitro complete plant regeneration of different cultivars of tobacco (*Nicotiana tabacum* L.) on media of different hormonal concentrations. Biotechnology. 6: 561-566.
49. Akbar, F. Fazal Hadi, Ullah, Z. 2007. 'Effect of marble industry effluent on seed germination, post germinative growth and productivity of *Zea mays* L. Pak .J. Biol. Sci, 10: 4148-4151.

#### **Papers presented in International Conferences**

1. Nasir Ali and Fazal Hadi . Molybdenum (Mo) increased the phytoremediation potential of *Ricinus communis* along with increase in endogenous phenolics, proline and photosynthetic pigments. 14th National & 5th International Conference of Botany“Climate Change and Phytodiversity: Challenges and Opportunities” January 15-18, 2016, Department of Botany, University of Karachi.
2. Fazal Hadi, Nasir Ali, Sanauallah., The Role of Iron in Cadmium Phytoextraction and Production of Endogenous free Proline and total Phenolics in *Ricinus communis* under hydroponic

- condition” Proc. International Phytotechnology Society 13<sup>th</sup> conference, Phytotechnologies for Sustainable Development, September 27-30, 2015, Kansas, USA
3. Fazal Hadi, Bano A, Mick Fuller., Phytoextraction of Lead (Pb+2) polluted soils; using different strategies for the selection of the best way of soil restoration. Proc. International Phytotechnology Society 8<sup>th</sup> Conference “Putting Plants to Work where we live, labor, Breath, and play” September 13-16, 2011, Potland, Oregon, USA.
  4. Fazal Hadi, Fuller, M. P. and M. Gilpin. Identification and expression analysis of CBF/DREB1 and COR15 genes in dehydration stress resistant mutants of cauliflower (*Brassica oleraceae* v. botrytis), Proc. Intern. Conf. organised by Soci. Experi. Biol. (SEB), 30th June-3rd July 2010, Prague, Czech Republic, pp 323-324.
  5. Fazal Hadi, and Fuller, M. P. (2009) 'Enhanced Tolerance to Abiotic Stress in Cauliflower by Mutagenesis', Proceeding, International Conference ‘Plant Abiotic Stress Tolerance’. 08-11 February, Austria, Vienna, p. 168.

#### **Papers presented in National Conference**

Fazal Hadi. “Contaminated soil restoration by Phytoextraction Technology using *Parthenium hysterophorus*” Proc. National Science Conference, Roadmap of Cutting Edge Technologies, Organized by Pakistan Academy of Sciences Islamabad, January 10-12, 2012, p. 312