Prof. Dr. Muhammad Saleem Haider,

Ph.D., DIC (University of London, UK)
Post Doctorate (University of Toronto, Canada)
Professor & Director, Institute of Agricultural Sciences,
University of the Punjab, Lahore.
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1. Education

Degree/ certificate	Year of completion	Institute/University	Research title	Major
Post Doctorate	2008	University of Toronto, Canada	Novel approach to generate wide spectrum resistance to cotton begomoviruses infecting cotton and other cultivated crops	Resistance through RNAi
PhD	1997	University of London, Imperial College of Science,Technology and Medicine, London (United Kingdom).	Characterization of whitefly-transmitted geminiviruses from Pakistan	Molecular Plant Virology
DIC	2003	University of London, Imperial College of Science,Technology and Medicine, London (United Kingdom).	-do-	(Plant Virology)
MSc (Hons) Agri	1991	University of Agriculture, Faisalabad (Pakistan)	Fungi associated with sunflower seed and their chemical control	Plant Pathology
BSc (Hons) Agri	1989	University of Agriculture, Faisalabad (Pakistan)	NA	Plant Pathology

2. Research Interests

My research interest focuses on the control of plant diseases caused by whitefly-transmitted geminivirus pathogens (begomoviruses), based on an understanding of the mechanisms underlying the successful interactions between the components of these virus-vector-host complexes.

Current studies involve:

(1) begomovirus diversity, with respect to (a) viral genotype and phenoptype, as these characteristics impact the molecular epidemiology of begomoviruses, and (b) the identification of important candidate viruses in the development of virus-resistant crop varieties,

(2) the *Bemisia tabaci* species complex: variability within populations using molecular markers, and

(3) the molecular basis for the specificity of whitefly-mediated transmission of begomoviruses

(4) development of diagnostic tests for unidentified or new viruses and virus like diseases.

(5) Use of fungus *Aspergillus sp*. for the cloning, expression and purification amylases enzymes.

(6) Exploiting viral coat protein gene for vaccine production against animal and human viruses and development of resistant plants against plant viruses.

3. Ph D students supervised (06)

Muhammad Tahir (School of Biological Sciences).

Molecular and biological analysis of begomoviruses; inside and outside the cotton zone in Pakistan. **(*PhD awarded, May 2009)***

Saima Iftikhar (School of Biological Sciences) as co-supervisor,

Cloning, Expression and Purification of antigenic protein of Hepatitis B Virus (HBV) **(*PhD awarded, March 2010)***

Zia-u-Rehman (HEC-Scholar)

Molecular and biological characterization of two begomoviruses infecting hollyhock plant, exhibiting different types of symptoms. (***Ph.D. awarded, December 2012***)

Nasir Ahmed (Higher Education Commission; HEC-Scholar)

Amylolytic enzyme (s) from hyperthermophilic archaea: cloning and characterization. (***Ph.D. awarded, December 2012***)

Zaheer Hussain (HEC-Scholar)

Cloning, expression and purification of antigenic protein of Rabies virus for GM-vaccine production (***Ph.D. Awarded in 2013***)

Muhammad Faisal Bashir (HEC-Scholar)

Characterization of Hepatitis C Virus Structural and Non-Structural Proteins from Pakistani isolates (***Ph.D. Awarded in 2015***)

4. Ph D students under supervision (9)

Sana Khalid (IAGS)

Molecular Investigation of Role of *coat protein* in Transmission of Two Different Geminiviruses.

Fasiha Qurashi (IAGS)

Genetic diversity of begomoviruses affecting diverse host plants in Peri-urban areas of Lahore

Farah Saeed (HEC Scholar)

Post transcriptional gene silencing suppression ability of various genes encoded by helper *Begomoviruses* and DNA-satellites.

Huma Adrees (HEC Scholar)

Management of charcoal root rot of cotton by combined application of bio-antagonists and chemical elicitors.

Aeysha Bibi (IAGS)

Diversity of endosymbiotic bacteria present in *Bemisia tabaci* of Pakistan

Muhammad Tariq Manzoor (IAGS)

Molecular and biological characterization of cotton infecting Mastreviruses from different cotton growing districts of Punjab and Sindh.

M. Javed Iqbal (IAGS)

A comprehensive approach to combat CLCuV.

Waheed Anwar (IAGS)

Isolation and characterization of chitinase gene from entomopathogenic fungi and its evaluation against *Bemisia tabaci*.

Sehrish Mushtaq (HEC Scholar)

Effect of whitefly transmitted geminiviruses on the physiology of *Lycopersicon esculentum* and *Nicotiana benthamiana*.

5. MS students supervised (28)

1. **Iqra Khan (2016).** *Parthenium hysterophorus*, a newly reported host of Begomoviruses in Pakistan.
2. **Iqra Asghar (2016).** Begomoviruses and associated satellites infecting cucurbits in Lahore region.
3. **Abdul Rehman (2016).** Begomoviruses infecting *Malvestrum tricupsidatum* in Lahore.
4. **Sidra Amanat Ali (2015).** Development of infectious clone of chickpea chlorotic dwarf virus and infectivity analysis.
5. **Chaudhry Ali Ahmad (2015) (HEC Scholar)**. Molecular characterization of geminiviruses infecting Okra.
6. **Iqra Saleem (2015).** Conventional and microsatellite based screening of rice germplasm against blast disease.
7. **Mamoona Asif (2015).** Transient and transgenic expression of GFP and Malvesterum yellow vein Chhanga Manga virus in different plants.
8. **Mujahid Rasool (2015).** Molecular and biochemical analysis of Alistonia leaf galls.

9. **Tehmina Bahar (2014)**. Plant response to transient expression of chickpea chlorotic dwarf virus coat protein gene and study of suppressor of RNA silencing.
10. **Rida-e-Fatima (2014).** PCR detection of the *Candidatus liberibacter* and biotyping of Asian citrus Psyllid species associated with Huanglongbing disease of citrus in Pakistan.
11. **Wajid Hussain (2014).** Detection and identification of begomoviruses from selected weeds of Lahore region.
12. **Khadija Imtiaz (2014).** Morphological and molecular characterization of Genera *Alternaria* from Pakistan.
13. **Rahat Ghaffar (2014).** Morphological and molecular characterization of Genera *Fusarium* from Pakistan.
14. **Anam Nawaz (2013).** Identification of pathogenic bacteria that associated with bacterial wilt disease of tomato.
15. **Sehrish Mushtaq (2013).** Effect of whitefly transmitted geminiviruses on the physiology of *Lycopersicon esculentum* and *Nicotiana benthamiana*.
16. **Saima Arif (2013).** Identification and phylogenetic analysis of Wolbachia endosymbiont from leafhopper using 16s rDNA gene.
17. **Asma Tanvir (2013).** Characterization and identification *Arsenophonus* endosymbiont from whitefly using 23s rDNA gene.
18. **Mehwish Rauf (2013).** Diversity and phylogenetic analysis of *Bemisia tabaci* species complex from Punjab, Pakistan based on mitochondrial DNA marker.
19. **Shagufta Perveen (2013).** Cloning and *E. coli* expression from cotton leaf curl multan virus rep gene.
20. **Saniya Sattar (2013).** Cloning and *E. coli* expression of βC1 gene from cotton leaf curl burewala betasatelite.
21. **Jahangir Khan (2013)**. Evaluation of tomato and associated weeds for resistance against tomato leaf curl disease complex.
22. **Muneeb Ullah Khan (2013).** Evaluating the effect of neem (*Azadirachta indica*) extract (leaves) in controlling bacterial diseases (bacterial leaf blight & soft rot) of cabbage and cauliflower.
23. **Mukhtar Ahmad (2012)** Molecular Characterization of Begomoviruses isolated from cucurbits and cotton.
24. **Fasiha Qureshi (2011)** Molecular Characterization of Begomoviruses isolated from a weed *Sonchus oleraceus* (Sowthistle)
25. **Farah Saeed (2011)** Molecular study of whitefly (*Bemisia tabaci*) biotypes in Pakistan.
26. **Kirn Nawaz (2011)** Molecular Characterization of Begomoviruses infecting *Catharanthus roseus*, Ornamental Plants in Pakistan.
27. **Sidra Bashir (2006)** characterization of begomoviruses from different vegetables, under natural conditions.
28. **Subtain Haider (2006)** characterization of begomoviruses from ornamentals plants in Lahore (**2006**)

6. MS students under Supervision (06)

1. Mubarak Ali Anjum (2016)
2. Hafiz M. Salman (2016)
3. Kamran Asif Khilji (2016)
4. Saif Anwar (2016)
5. Aneela Zainab (2016)
6. Nida Javaid (2016)

7. Employment

Professor, March 7, 2010 to date
Institute of Agricultural Sciences,
University of the Punjab, Lahore.

- Studies on virus-vector interactions with special reference to cotton leaf curl virus (CLCuV), identification of new viruses and virus-like diseases.
- Host range and symptomatology of begomoviruses.
- Biotyping and virus transmission studies of the whitefly the vector of begomoviruses.
- Development of resistance against begomoviruses through biotechnological approach.
- Development of GM vaccines against animal and human viruses.

Assistant Professor, School of Biological Sciences, University of the Punjab, Lahore. April 26, 2003 – March 6, 2010

Asstt. Research Officer, July 28, 2002 – April 25, 2003.
Plant Virology Section,
Ayub Agricultural Research Institute, Faisalabad.

- Studies on cotton leaf curl virus (CLCuV) with special reference to Burewala strain.

Agricultural Officer (Plant Protection) Sep. 19, 1998 – July 27, 2002.
Pest Warning and Quality Control of Pesticides, Punjab, Lodhran.

- Survey and Pest scouting of different field crops and recommendations for the control.
- Research trials using IPM techniques and developmental studies for the improvement and introduction of innovative Plant Protection practices.
- Arrangements of training and refresher courses for the extension staff and farmers, laying out demonstration plots, establishing of model farms for the dissemination of improved plant protection technology to get maximum yield potential.

Senior Scientific Officer, October 1st, 1997, - Sep. 18, 1998.
Central Cotton Research Institute, Multan, Pakistan.

- Studies on the management of cotton leaf curl virus (CLCuV) in Pakistan through multidisciplinary approach and transmission studies through whitefly *Bemisia tabaci* the vector for CLCuV.

Research Officer, January 21, 1997 – July 20, 1997.
Centre for Advanced Molecular Biology,
University of the Punjab, Lahore, Pakistan.

- Establishement of sucking Insect pest Insectary at the Centre
- Search for novel *Bacillus thuringiensis* (Bt) isolates toxic against sucking insect pests eg., aphids and whiteflies.

8. Courses taught

2016-17: Introduction to Molecular Plant Pathology to B.Sc. (Hons.) Agri. (Plant Pathology); Introduction to Plant Viruses to B.Sc. (Hons.) Agri. (Plant Pathology).

2016: Plant Quarantine & SPS Measures to Ph.D.; Genetic Plant Pathology to M.Sc. (Hons.) Agri. (Plant Pathology); Plant Resistance to Diseases to B.Sc. (Hons.) Agri. (Plant Pathology).

2015-16: Introduction to Molecular Plant Pathology to M.Sc. (Hons.) Agri. (Plant Pathology); Introduction to Plant Viruses to M.Sc. (Hons.) Agri. (Plant Pathology).

2015: Genetic Plant Pathology to M.Sc. (Hons.) Agri. (Plant Pathology).

2014-15: Plant Virology to M.Sc. (Hons.) Agri. (Plant Pathology); Introduction to Plant Viruses to M.Sc. (Hons.) Agri. (Plant Pathology) Morning & Replica Classes.

2014: Integrated Plant Disease Management to M.Sc. (Hons.) Agri. (Plant Pathology).

2013-14: Plant Virology to M.Sc. (Hons.) Agri. (Plant Pathology); Introduction to Plant Viruses to M.Sc. (Hons.) Agri. (Plant Pathology).

2013: Integrated Plant Disease Management to M.Sc. (Hons.) Agri. (Plant Pathology).

2012-13: Plant Quarantine and SPS Measures to Ph.D.; Molecular Plant Virology to Ph.D.; Plant Virology to M.Sc. (Hons.) Agri. (Plant Pathology)

2011-12: Molecular Plant Virology to Ph.D.

2010-2011: Plant Virology (MSc (Hons) Class, Introductory Plant Virology (BSc (Hons) Class, Principles of Plant Disease Management (BSc (Hons) Class, Plant Quarantine and SPS Measures (PhD Class)

2010: Course SBS 507 Virology (MPhil. Leading to PhD Class)
Viral classification and structure, Bacteriophages and animal and plant viruses, genome replication and regulation, virus-host interaction,viral pathogenesis, RNA transforming viruses, host defence mechanisms, vaccines, antiviral drugs.

2007: Virology course for international GRE and PhD comprehensive Exam (PhD class of 2005 & 2006 at School of biological Sciences, PU, Lahore)

2007: Phytovirology Course 5202a (MSc Hons. Plant Pathology 4th Semester)
2006: Phytovirology Course 5202a (MSc Hons. Plant Pathology 4th Semester)
Dept. of Mycology & Plant Pathology, Punjab University, Lahore

2005-07: Introductory Virology (MSc Microbiology & Molecular Genetics)
2005-07: Introductory Virology (BSc Hons. Microbiology & Molecular Genetics)
Dept. of Microbiology & Molecular Genetics, Punjab University, Lahore.

9. Computer Knowledge

Proficient knowledge of Microsoft word, Microsoft Excel, Microsoft PowerPoint and other Windows based packages, DNA analysis software; BLAST, Multiple sequence alignment, Phylogenetic analysis.

10. Courses Attended

A three days training workshop on Project Proposal Writing under Punjab Agricultural Research Board (PARB) Competitive Grant System (CGS) at Agriculture House, Lahore, Pakistan. November 9-11, 2009.

Training course on the hazards of ionizing radiation and safe handling of radioactive substances, 22nd June 1993 at Institute of Food Research (Norwich Laboratory)

Postgraduates Lectures on Molecular Techniques in Biology, January/February 1995 at John Innes Centre, Norwich.

Lectures on Plant Virology, Transmission-vector specificity, purification, serology and molecular biology (Oct. 1995-Dec. 1995, University of East Anglia, Norwich).

11. Patents

1. Ahmad, N, Rashid, N, **Haider, MS** and Akhtar, M. (2013). Single step liquefaction and saccharification of corn starch using an acidophilic, calcium independent and hyperthermophilic pullulanase. Patent with United States Patent and Trademark Office (USPTO), vide application No. 13/765,481 dated 12th February 2013.
2. **Haider, MS** (2013). Novel approach to generate wide spectrum resistance to cotton begomoviruses infecting cotton and other cultivated crops. Patent with Higher Education Commission, Islamabad, Pakistan (in process).

12. Distinctions

1. Awarded Gold Medal on great performance in Agriculture/Dairy & Livestock/ Poultry by Unity Human Well Wishers Council, Lahore, Pakistan – A registered social welfare department, Government of the Punjab (2013).
2. Awarded Quaid-e-Azam Gold Medal – 2014 by Tehreek-e-Istehkam-e-Pakistan Council (Regd.) Pakistan on 28th June 2014 on best performance in the field of Agriculture.
3. Awarded Publication Incentive Award 2013 (Rs.66,500/-) by the University of the Punjab.
4. Awarded Publication Incentive Award 2014 (Rs.65,667/-) by the University of the Punjab.

13. Membership of Scientific/Professional Organizations

- Convener, Board of Studies in Agricultural Sciences (2010 – todate)
- President, Pakistan Phytopathological Society – since 2016
- Member, Board of Faculty of Life Sciences
- Editor In-Chief for Mycopath Journal
- Editor-in-Chief, Pakistan Journal of Phytopathology.
- Member-Editorial Board for Journal of Life Sciences, USA
- Member-European Federation of Biotechnology
- Member, Editorial Board, Quarterly Journal of Agricultural Research
- Fellow-The Zoological Society of Pakistan
- Member Myco-Phytopathological Society of Pakistan
- Member Bioinformatics.org
- Member-Pakistan Agricultural Research Scientists Association
- Member Association of Applied Biologists (1993-1996)
- Member world *Cucurbitaceae* Scientists
- Reviewer: Journal of Microbiology and Antimicrobials
- Reviewer: Journal of Life Sciences, USA
- Reviewer: Pakistan Journal of Botany
- Reviewer: Sarhad Journal of Agriculture
- Reviewer: Pakistan Journal of Agricultural Sciences
- Reviewer: African Journal of Biotechnology
- Reviewer: African Journal of Agricultural Sciences

- Warden, Boys Hostel No.19
- Warden, Boys Hostel No.15 (additional duty)
- Member, Departmental Tenure Review Committee (DTRC), CEMB (since 2015)
- Member, Departmental Tenure Review Committee (DTRC), CEES (since 2016)
- Member, Capacity Building of Government Departments (since 2016)
- Member, Committee to issue clearance certificate for submission of NRPU projects to HEC (since 2016).

14. List of Publications

1. Bibi, A., Shafiq, M., Arif, S., Tanveer, A., Manzoor, M.T. and **Haider, M.S.** (2016). First report of the molecular characterization of the endosymbiont candidatus, *Portiera alevrodidarum* from cotton whiteflies collected from Pakistan. *International Journal of Agriculture & Biology*, **18**: 282-285. **(Impact Factor: 0.758).**

2. Majeed, R.A., Shahid, A.A., Liaqat, G.A., Saleem, K., Asif, M., Shafiq, M., **Haider, M.S.** and Noreen, M. (2016). First report of *Setosphaeria rostrata* causing brown leaf spot of rice in Pakistan. *Plant Disease*, **100**(10): 2162. **(Impact Factor 3.2).**

3. Ghaffar, R., Anwar, W., Imtiaz, K., Shafiq, M., Subhani, M.N. and **Haider, M.S.** (2016). Diversity of internal transcribed spacer (ITS) region of *Fusarium* isolates in Pakistan. *The Journal of Animal and Plant Sciences*, **26**(5): **(Impact Factor: 0.422)**.

4. Iqbal, M.J., Hussain, W., Zia-ur-Rehman, Hameed, U. and **Haider, M.S.** (2016). First report of chilli leaf curl virus and associated alpha- and beta-satellite DNAs infecting nettle weed (*Urtica dioica*) in Pakistan. *Plant Disease*, **100**(4): 870. **(Impact Factor 3.2).**

5. Khan, H.A.A., Akram, W., Khan, T., **Haider, M.S.**, Iqbal, N. and Zubair, M. (2016). Risk assessment, cross-resistance potential, and biochemical mechanism of reistance to emamectin benzoate in a field strain of house fly (*Musca domestica* Linnaeus). *Chemosphere*, **151**: 133-137. **(Impact Factor 3.34).**

6. Ashfaq, M., Mubarak, R., Saleem, M.Y., Ali, A., Ali, M. and **Haider, M.S.** (2016). Quantitative disease study of early blight of tomato under natural field conditions. *International Journal of Agriculture & Applied Sciences*, **8**(1): 31-34.

7. Ali, A., Ashfaq, M., **Haider, M.S.**, Hafeez, R. and Ali, M. (2016). Evaluation of phyllospheric bacterial community in some medicinal plants and their antimicrobial activity. *International Journal of Biology & Biotechnology*, **13**(3): 407-413.

8. Ali, A., Bashir, U., Akhtar, N. and **Haider, M.S.** (2016). Characterization of growth promoting rhizobacteria of leguminous plants. *Pakistan Journal of Phytopathology*, **28**(1): 57-60.

9. **Haider, M.S.**, Ashfaq, M., Ali, A., Ali, M., Saleem, I. and Mubashar, U. (2016). Morphological characterization of endophytic bacterial strains isolated from discolored rice grain. *Pakistan Journal of Phytopathology*, **28**(1): 1-8.
10. Majeed, R.A., Shahid, A.A., Ashfaq, M., Saleem, M.Z. and **Haider, M.S.** (2016). First Report of *Curvularia lunata* Causing Brown Leaf Spots of Rice in Punjab, Pakistan. *Plant Disease*, **100**(1): 219. **(Impact Factor 3.2).**
11. Shahbaz, M., Shahzad, A.N., Khan, H.A.A., Anees, M., **Haider, M.S.** and Fatima, A. (2015). Impact of copper toxicity on stone-head cabbage (*Brassica oleracea* var. *capitata*) in Hydroponics. *Peer J*., DOI: 10.7717/peerj.1119. **(Impact Factor 2.112)**.
12. Anwar, W., **Haider, M.S.**, Aslam, M., Shahbaz, M., Khan, S.N. and Bibi, A. (2015). Assessment of antifungal potentials of some aqueous plant extracts and fungicides against *Alternaria alternate*. *Journal of Agriculture Research*, **53**(1): 75-82.
13. Anwar, W., Khan, S.N., Aslam, M., **Haider, M.S.**, Shahid, A.A. and Ali, M. (2015). Exploring fungal flora associated with insects of cotton agroecological zones of Punjab, Pakistan. *Pakistan Entomologist*, **37**(1): 27-31.
14. Iqbal, M.J., Hussain, W., Zia-ur-Rehman, M., Hameed, U. and **Haider, M.S.** (2015). First report of chilli leaf curl virus and associated alpha- and beta-satellite DNAs infecting nettle weed (*Urtica dioica* L.) in Pakistan. *Plant Disease* (accepted and published online on 17 Nov. 2015) **(Impact Factor 3.02)**
15. Bibi, A., Shafiq, S., Arif, S. Tanveer, A., Manzoor, M.T. and **Haider, M.S.** (2015). First report of the molecular characterization of the endosymbiont *Candidatus portiera* Aleyrodidarum from cotton whiteflies collected from Pakistan. *International Journal of Agriculture & Biology*, DOI: 10.17957/IJAB/15.0083. **(Impact Factor: 0.902)**.
16. Ali, M., Ali, Q., Anwer, S., Khalid, H., Ahmad, A., Ali, A., Shafiq, S., **Haider, M.S.**, Nasir, I.A. and Husnain, T. (2015). Estimation of correlation among various morphological traits of *Coronopus didymus*, *Euphorbia helioscopia, Cyperus difformis* and *Aristida abscensionis*. *New York Science Journal*, **8**(4): 47-52.
17. Khalid, H., Ali, Q., Anwer, S., Ali, M., Ahmad, A., Ali, A., Shafiq, S., **Haider, M.S.**, Nasir, I.A. and Husnain, T. (2015). Biodiversity and correlation studies among various traits of *Digeria arvensis, Cyperus rotundus, Digitaria adescendense* and *Sorghum halepense*. *New York Science Journal*, **8**(4): 37-42.
18. Anwer, S., Ali, Q., Ali, M., Khalid, H., Ahmad, A., Ali, A., Shafiq, S., **Haider, M.S.**, Nasir, I.A. and Husnain, T. (2015). Assessment of association among various morphological traits of *Euphorbia granulate, Euphorbia hirta, Fumaria indica* and *Parthenium hysterophorus*. *Nature and Science*, **13**(5): 47-51.

19. Ashfaq, M., Shaukat, M.S., Akhter, M., **Haider, M.S**., Mubashar, U. and Hussain, S.B. (2015). Comparison of fungal diversity of local and exotic rice (*Oryza sativa* L.) germplasm for their seed health. *The Journal of Animal and Plant Sciences*, **25**(5): 1349-1357. **(Impact Factor: 0.48)**

20. Ashfaq, M., **Haider, M.S.**, Saleem, I., Ali, M., Ali, A. and Chohan, S.A. (2015). Basmati–Rice a Class Apart (A review). *J. Rice Res*. **3**(4): 1-8.

21. Ali, A., Akhtar, N., Bashir, U., Hafeez,R. and **Haider, M.S.** (2015). Morphological and biochemical characterization of bacteria isolated from milk products. *Biologia (Pakistan)*, **61**(2): 271-277.

22. Hafeez, R., Akhtar, N., Shoaib, A., Bashir, U., **Haider, M.S.** and Awan, Z.A. (2015). First report of *Geotrichum candidum* from Pakistan causing postharvest sour rot in Loquat (*Eriobotrya japonica*). *The Journal of Animal & Plant Sciences*, **25**(5): 1737-1740 (**Impact Factor: 0.448**).

23. Khan, H.A.A., Akram, W. and **Haider, M.S.** (2015). Genetics and mechanism of resistance to deltamethrin in the house fly, *Musca domestica* L., from Pakistan. *Ecotoxicology*, **24**(6): 1213-1220 **(Impact Factor: 2.706).**

24. Zia-Ur-Rehman, M., Hameed, U., Herrmann, H.W., Iqbal, M.J., **Haider**, **M.S.** and Brown, J.K. (2015). First report of *Chickpea chlorotic dwarf virus* infecting tomato crops in Pakistan. *Plant Disease*, **99**(9): 1287 **(Impact factor 3.02).**

25. Tahir, M., Amin, I., **Haider, M.S.**, Mansoor, S. and Briddon, R.W. (2015). *Ageratum enation* virus—A begomovirus of weeds with the potential to infect crops. *Viruses*, **7**: 647-665.

26. Ali, A., **Haider, M.S.**, Hanif, S. and Akhtar, N. (2014). Assessment of the antibacterial activity of *Cuscuta pedicellata* Ledeb. *African Journal of Biotechnology*, **13**(3): 430-433.

27. Hameed, U., Zia-Ur-Rehman, M., Herrmann, H.W., **Haider,** M.S. and Brown, J.K (2014). First report of Okra enation leaf curl virus and associated Cotton leaf curl Multan betasatellite and Cotton leaf curl Multan alphasatellite, infecting cotton in Pakistan: a new member of the cotton leaf curl disease complex. *Plant Disease*, **98**(10): 1447-1447 **(Impact Factor 3.020)**

28. Brown, J.K., Herrmann, H.W., Zia-Ur-Rehman, M., Hameed, U. and **Haider, M.S.** (2014). Begomovirus diversity, phylogeography, and population genetics in cultivated and uncultivated plant ecosystems in Pakistan. *Crop Protection*, **61**: 104 **(Impact Factor 1.493).**

29. Bashir, U., Ali, A., Akhtar, N. and **Haider, M.S.** (2014). Isolation and characterization of bacterial species associated with weed plants. *Pakistan Journal of Weed Science*, **20**(4): 439-447.

30. Ali1, S., Shahbaz, M., Nadeem, M.A., Ijaz, M., **Haider, M.S.**, Anees, M. and Ali, H.A. (2014. The relative performance of weed control practices in September sown maize. *Mycopath*, **12**(1): 43-51.

31. Ashfaq, M., Ali, A., Nawaz, A., Bashir, U., **Haider, M.S.** and Ali, M. (2014). Isolation and characterization of *Pseudomonas* species associated with tomato wilt. *Biologia (Pakistan)*, **60**(2): 237-242.

32. Ashfaq, M., **Haider, M.S.**, Ali, A., Hanif, S. and Mubashar, U. (2014). Screening of diverse germplasms for genetic studies of drought tolerance in rice (*Oryza sativa* L.). *Caryologia (International Journal of Cytology, Cytosystematics and Cytogenetics)*, **67**(4): 296-304**.**

33. Ashfaq, M., Ali, A., **Haider, M.S.**, Ali, M., Asadullah, Mubashar, U., Mubashar, H., Saleem, I. and Sajjad, M. (2014). Allelopathic Association Between Weeds Extract and Rice (*Oryza sativa* L.) Seedlings. *Journal of Pure & Applied Microbiology*, **8**(2): 573-580.

34. Javaid, A., Akram, W., Shoaib, A., **Haider, M.S.** and Ahmad, A. (2014). ISSR analysis of genetic diversity in *Dalbergia sissoo* in Punjab, Pakistan. *Pak. J. Bot*., **46**(5): 1573-1576 **(Impact factor: 0.822).**

35. Ali, M., Ashfaq, M., Rana, N., Haider, M.S., Ashfaq, M. and Amjad, M. (2014). The susceptibility study of some aubergine (*Solanum melongena* L.) cultivars against jassid (*Amrasca biguttula biguttula* (ISHIDA). *Pak. J. Agri. Sci.*, **51**(3): 679-683 **(Impact Factor: 1.049)**.

36. Mushtaq, S., Shamim, F., Shafique, M. and **Haider, M.S.** (2014). Effect of whitefly transmitted geminiviruses on the physiology of tomato (*Lycopersicon esculentum* L.) and tobacco (*Nicotiana benthamiana* L.) plants. *Journal of Natural Sciences Research*, **4**(9): 109-118.

37. Ali, A., **Haider, M.S.** and Ashfaq, M. (2014). Effect of culture filtrates of *Trichoderma* spp., on seed germination and seedling growth in chickpea – An *in vitro* study. *Pakistan Journal of Phytopathology*, **26**(01): 01-05.

38. Ashfaq, M., Ali, A., **Haider, M.S.,** Ali, M., Abdullah, M. and Mubashar, U. (2014). A role of weed solvents on seed priming of diverse rice germplasm lines. *Journal of Pure & Applied Microbiology*, **8**(3): 2175-2184.

39. Ashfaq, M., **Haider, M.S.**, Khan, A.S., Ali, M., Ali, A. and Mubashar, U., 2014. Breeding for micronutrient improvements in rice (*Oryza sativa* L.) for better human health. *Journal of Food, Agriculture & Environment*, **12**(2): 365-369.

40. Ali, S., Nadeem, M.A., **Haider, M.S.**, Anees, M., Khan, H.A.A. and Shahbaz, M. (2014). The relative performance of weed control practices in September sown maize (*Zea mays* L.). *Mycopath*, **12**(1): 43-51.

41. Manzoor, M.T., Ilyas, M., Shafiq, M., **Haider, M.S.** and Briddon, R.W. (2014). A distinct strain of chickpea chlorotic dwarf virus (genus *Mastrevirus*, family Geminiviridae) identified in cotton plants affected by leaf curl disease. *Arch. Virol*., **159**(5): 1217-1221 (**Impact factor: 2.390).**

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Publications in Proceedings

113. Rehman, Z.U., Hammed, U., **Haider, M.S.**, Herrmann, H.W. and Brown, J.K. (2013). Cotton leaf curl virus invading new hosts in Pakistan. Abstract – published in 7th International Geminivirus Symposium & 5th International ssDNA Comparative Virology Workshop, held from 3-9 November 2013 at Hangzhou, China, pp.41

114. **Haider, M.S.**, Qureshi, F., Ilyas, M. and Shafiq, M. (2013). Characterization of begomovirus isolated from a weed *Sonchus oleraceus* (Sowthistle) from Pakistan. Abstract – published in 7th International Geminivirus Symposium & 5th International ssDNA Comparative Virology Workshop, held from 3-9 November 2013 at Hangzhou, China, pp.57.

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119. **Haider M. S**., Tahir, M. Saeed A, Shah A. H. Rashid N., Javed M. A. and Iqbal J. (2007) Vinca minor: another host of a tomato infecting begomovirus in Pakistan. African Crop Science Conference Proceedings Vol. 8, pp 905-907.

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Books, Articles, Chapters and Annual Reports

1. Shahid, A.A., Yasin, S., Inam-ul-Haq, M., Ali, M. and **Haider, M.S.** (2013). Use of rhizobacteria for the management of soft rot disease of potato. ATINER CONFERENCE PAPER SERIES No: AGR2013-0770 5.
2. Saeed F., **Haider M. S**. and Shafiq M. (2012) Biotypes of Whitefly (*Bemisia tabaci*) in Pakistan. LAP Lambert Academic Publishing, ISBN 978-3-8484-1231-0, paperback, 56 Pages
3. Qureshi F., **Haider M. S**. and Shafiq M. (2012) Molecular Characterization of Begomoviruses isolated from a Weed. LAP Lambert Academic Publishing ISBN 978-3-8484-9934-2, paperback, 68 Pages
4. Javed S, Ahmad R, and **Haider MS** (2012) Phytochemical Investigation of Citrus limetta Peel Oil. 978-3-8484-9789-8, 89 pages VMD Verlag Dr Muller and the German National Library and Online at www.amazon.com
5. Ashfaq, M., Khan A. S. and **Haider M. S**. (2012) Genetics of rice under normal and water stress conditions. LAP Lambert Academic Publishing, ISBN 978-3-8473-2955-8, paperback, 184 Pages
6. **Haider, MS** (1999) Characterization of whitefly-transmitted geminiviruses from Pakistan In "*Research on Plant Viral Diseases in Pakistan*" (1999) ed. Khalid, S., pp 197-199. Agha Jee Printers, Islamabad, Pakistan
7. Markham, P. G., Bedford, I. D., Pinner, M., Liu, S. and **Haider, M. S.** (1993) Variation within the whitefly-transmitted geminiviruses and vector *Bemisia tabaci* (Gennadius). *Annual Report* 1993, AFRC Institute of Plant Science Research, John Innes Centre, Norwich, UK. p38.

Conferences Organized

1. **Muhammad Saleem Haider (2015).** Organized one-day workshop on "Dengue Management", on 21st December 2015 at IAGS.
2. **Muhammad Saleem Haider (2015)**. Organized 2-day Workshop on "Next Generation Sequencing" from 4th to 5th December 2015 at IAGS.
3. **Muhammad Saleem Haider (2015)**. Organized 5th International/10th National Conference of Pakistan Phytopathological Society on "Crop Protection for Sustainable Agriculture", from 23rd to 25th November 2015 at IAGS.

4. **Muhammad Saleem Haider (2015).** Organized a Stall of Agricultural products and activities in the "Dawn Sarsabz Pakistan Agri Expo & Conference 2015, held from 19th to 20th March 2015 at Expo Centre, Johar Town, Lahore.
5. **Muhammad Saleem Haider (2014)**. Organized an awareness seminar on "Food Safety and Hygiene", on 13th November 2014 at IAGS.
6. **Muhammad Saleem Haider (2014)**. Organized an International Conference on "Stress Biology and Biotechnology: Challenges & Management", held from 21st to 23rd May 2014 at the Institute of Agricultural Sciences.
7. **Muhammad Saleem Haider** (2013). Organized a seminar on "Policy Adequacy and Awareness on Agriculture Financing" in collaboration with State Bank of Pakistan, Agricultural Credit & Microfinance Department, Karachi, held on 3rd October 2013 at the IAGS.
8. **Muhammad Saleem Haider** (2013). Organized 3-day training workshop on "Cotton Leaf Curl Disease (CLCuD) Diagnostics & Resistance" at the IAGS, from 26th to 28th August 2013, sponsored by USDA through ICARDA.
9. **Muhammad Saleem Haider** (2013). Organized "Invention to Innovation Summit 2013" from 9th to 10th April 2013 in collaboration with ORIC, University of the Punjab, Lahore.
10. **Muhammad Saleem Haider** (2013). Organized "Dawn Sarsabz Pakistan Agri Expo & Conference 2013 at Expo Centre, Johar Town, Lahore.

Presentations/Participation in national and international conferences

1. Attended and presented paper titled "Molecular characterization and pathogenicity of *Cucurbita pepo* infecting new variant of tomato leaf curl palampur virus in Pakistan" in the 34th Annual Meeting of the ASV, held from 11-15 July 2015 at Western University, London, Ontario, Canada.
2. Attended Plant & Animal Genome (PAG XXIII) Conference, held in San Diego, CA, USA, from 10th to 14th January, 2015.
3. Attended and presented paper on "Are we heading towards the third epidemic in cotton: Past, present and future consequences? OR Cotton serving as a melting pot or geminiviruses" in the XIVth International Congress of Bacteriology and Applied Microbiology; XVIth International Congress of Mycology and Eukaryotic Microbiology; and XVth International Congress of Virology, held from 27th July to 1st August 2014 at Montreal, Canada.
4. Participated in 'World Mango Conference & Exhibition', held on 24-25 June 2014 at University College of Agriculture & Environmental Sciences, Islamia University, Bahawalpur.
5. Attended a seminar on "Genomic-assisted plant breeding approaches – An emerging paradigm for crop improvement" delivered by Dr. Javed Iqbal, Centre of Excellence in Molecular Biology (CEMB) on 12th June 2014.
6. Participated in the seminar on "Effect of global warming on agriculture" by Mr. Haroon Akram Gill, Climate Leader, Climate Reality Project, USA, held on Thursday, 29th May 2014 in the IAGS.

7. Attended a training workshop on "Self esteem & fear of failure" organized by the Career Counseling & Placement Centre, University of the Punjab, held on 15.05.2014 at IAGS.
8. Presented a paper "Whitefly: Vector of begomoviruses and its management", in the workshop 'The development and testing of transgenic for cotton leaf curl virus (CLCuV) disease resistance', held at CEMB on 18-19 March 2014.
9. Participated in International Conference of Pakistan Phytopathological Society "Climate Change and Plant Diseases: Challenges and Opportunities", held from 23-25 January, 2014 at University of Karachi, Karachi.
10. Attended and presented paper on "Characterization of begomoviruses isolated from a weed *Sonchus oleraceus* (Sowthistle) from Pakistan" in 7th International Geminivirus Symposium & 5th International ssDNA Comparative Virology Workshop, held at Hangshou, China, from 3-9 November 2013.
11. Attended "11th Biennial Conference on "Molecular Biosciences – Challenges and Opportunities", held on 25-28 November 2013 at Faisal Auditorium, University of the Punjab, Lahore, under the auspices of Pakistan Society for Biochemistry and Molecular Biology.
12. Attended the Training Workshop on "Trade in Services", held on 8th October 2013 at Pearl Continental Hotel, Lahore under the auspices of Pakistan Institute of Trade and Development (PITAD), Ministry of Commerce, Islamabad.
13. Participated in the training workshop on "Trade and Investment", held at Pearl Continental Hotel, Lahore, from 10th to 11th September 2013.
14. Participated in the conference on "Bio-physicochemical basis for Technopreneurship" – a joint venture of MMG & IBA, held on 2nd April 2013 at Al-Razi Hall, Undergraduate Block, University of the Punjab, Lahore.
15. **Muhammad Saleem Haider**, Zaheer Hussain, Xiang WU, Zafar Ul Ahsan Qureshi, Andr´es Velasco-Villa, Shahida Afzaal and Charles Rupperchet (2012) Development of Genetically Recombinant Rabies Vaccine. 2nd Word Congress of Virology, held August, 20-22, 2012, Embassy Suits, Las Vegas, USA.
16. **Muhammad Saleem Haider**, Naseer Ahmed and Naeem Rashid (2012) Production of Glucose Syrup by the action of Recombinant α -Amaylase purified by efficient method. International Food and Agricultural Congress held February,15-19, 2012, Antalya, Belek, Turkey

17. Shabnam Javed, Sehrish Iftikhar, Ahmad Ali Shahid, Sabahat Zahra Siddiqui and **M. Saleem Haider**, 2012. Essential Oils and Latex as Novel Antiviral Agents against Potato Leaf Roll Virus (PLRV). In Abstracts book; 13TH International Symposium on Natural Product Chemistry, September 22-25, H.E.J Research Institute Of Chemistry, International Centre For Chemical And Biological Sciences, University of Karachi, Pakistan:201.

18. Sehrish Iftikhar, Shabnam Javed, Ahmad Ali Shahid, Sobia Mushtaq and **M. Saleem Haider,** 2012. Monitoring of Antimicrobial Activity of Natural Products Using Molecular Marker. In Abstracts book; 13TH International Symposium on Natural Product Chemistry, September 22-25, H.E.J Research Institute Of Chemistry, International Centre For Chemical And Biological Sciences, University of Karachi, Pakistan:199.

19. Shabnam Javed, **M. Saleem Haider** and Sobia Mushtaq, 2011. Phytochemical investigation & in vitro comparative screening of antimicrobial activities of some common weed extracts. In Abstracts 8TH National Conference of Pakistan Phytopathological Society, November 28-29,2011, University of Agriculture, Faisalabad :107.

20. Shabnam Javed, Sehrish Iftikhar, **Muhammad Saleem Haider** & Shaista Nawaz, 2012. Garlic (*Allium sativu*), Onion (*Allium cepa*) and Ginger (*Zingiber officinalis*) Powder preparation and their Nutritional and Phytochemical Investigation. In Abstracts book; International Conference on Safe Food and Human Health, January 10-11, GC University, Faisalabad, Pakistan: 50.

21. Shabnam Javed, Ahmad Ali Shahid & **Muhammad Saleem Haider**, Ayesha Umeera, Rauf Ahmad and Sobia Mushtaq, 2012. Nutritional, Phytochemical & Antimicrobial evaluation Of Kitchen Spices *Nigella Sativa* (Kalonji) & *Trachyspermum Ammi* (Ajwain). In Abstracts book; International Conference on Safe Food and Human Health, January 10-11, GC University, Faisalabad, Pakistan:50.

22. Shabnam Javed, Sobia mushtaq, **Muhammad Saleem Haider**, 2012. In vitro fungitoxicity of the essential oil of Syzygium aromaticum (Clove) and *Foeniculum vulgare* (Fennel) Essential Oils, In Abstracts book; International Conference on Safe Food and Human Health, January 10-11, GC University, Faisalabad, Pakistan:63.

23. Shabnam Javed, Sobia mushtaq, **Muhammad Saleem Haider**, Rauf Ahmed & Shaista. 2012. Essential Oils Derived From Citrus Fruits in Food Protection and Medicine:GC-MS analysis of Citrus essential oils. In Abstracts book; International Conference on Safe Food and Human Health, January 10-11, GC University, Faisalabad, Pakistan:64.

24. **Haider M.S**, Ilyas M, Ahmed T and AbouHaidar M.G. (2011) A study of Begomoviruses from Malvaceous hosts and use of RNAi approach for their control. Challenges and Options for Plant Health Management, 8th National Conference of Phytopathology, held November 28-29, University of Agriculture, Faisalabad p-96.

25. Khan S. N., Anwar W., and **Haider M. S.** (2011) Effect of planting environment and input application on natural distribution pattern of entomopathogens. International Science and Technology Conference 2011, held December 7-9, at Istanbul University, Turkey

26. M. Zia-Ur-Rehman, **M.S. Haider** and J. K. Brown (2011) Hollyhock *(Alcea rosea)* as a reservoir of the Cotton leaf curl disease (CLCuD) associated *begomoviruses.* 5th Meeting of the Asian Cotton Research & Development Network, held Feb. 23-25, Pearl Continental Hotel, Lahore, Pakistan

27. Farah S., **Haider M. S**., Shafiq M. and Ilyas M. (2011) A study based on Molecular analyses of whitefly (*Bemisia tabaci*) populations from Punjab, Pakistan. Challenges and Options for Plant Health Management, 8th National Conference of Phytopathology, held November 28-29, University of Agriculture, Faisalabad p-97.

28. M. Zia-Ur-Rehman, **M.S. Haider** and J. K. Brown (2011) Molecular Characterization of a Novel Monopartite Begomovirus infecting Hollyhock (Alcea rosea) in Pakistan. Challenges and Options for Plant Health Management, 8th National Conference of Phytopathology, held November 28-29, University of Agriculture, Faisalabad p-83.

29. M. Zia-Ur-Rehman, **M.S. Haider** and J. K. Brown (2011) Multiple infection and recombination among begomoviruses infecting Hollyhock (*Alcea rosea*) in Pakistan. Challenges and Options for Plant Health Management, 8th National Conference of Phytopathology, held November 28-29, University of Agriculture, Faisalabad p-97-98.

30. Perveen R. and **Haider M.S.** (2011) Studies on correlation between CLCuV disease and whitefly population on different local cotton varieties. Challenges and Options for Plant Health Management, 8th National Conference of Phytopathology, held November 28-29, University of Agriculture, Faisalabad p-95.

31. Shafiq M., Anwar W**.,** Bibi A., Manzoor M. T. and **Haider M. S**. (2011). Effects of Humic Acid and Foliar NPK in Potato Fields. International Conference on Prospects and Challenges to Sustainable Agriculture. Organized by Faculty of Agriculture, Rawalakot, University of Azad Jammu and Kashmir. July 14-16.

32. Anwar W**.,** Khan S. N., and **Haider M. S**., (2011). Diversity of Insect Associated Fungi in Agroecological Zones and different land use type. National Symposium on Biodiversity of Pakistan at Pakistan Museum of Natural History. June 07-09.

33. Briddon, R. W., **Haider, M. S.** and Tahir, M. (2010) Cucurbits-A Paradise of Begomoviruses. Cucurbitaceae 2010, 14-18 November 2010, Francis Marion Hotel, Charleston, South Carolina. USA

34. Haider, M. S., Tahir, M., Iqbal. J.,and Briddon, R. W. (2008). Complete nucleotide sequence and phylogenetic analysis of the bipartite begomovirus *squash leaf curl China virus* infecting *Cucurbita pepo* in Pakistan. Accepted as Poster Presentation in 6th Canadian Plant genomics Workshop, to be held 23-26 June, 2008 in Toronto, Ontario. Canada.

35. Tahir, M., **Haider, M. S.,** and Briddon, R. W. (2007)**.** *Ageratum* enation virus causes yellow vein disease of *Sonchus oleraceus. 5th International Geminivirus Symposium*, (May 20 to 26, 2007) Ouro Preto, Brazil. Section W2-2, 18p

36. Tahir, M., **Haider, M. S.,** Akhtar, M and Briddon, R. W. (2007)**.** A new species of begomovirus "Pepper leaf curl Lahore virus" infecting *Capsicum annuum* var. grossum under natural conditions. *5th International Geminivirus Symposium*, (May 20 to 26, 2007) Ouro Preto, Brazil. Section P2-4, 94p

37. Tahir, M and **Haider M. S.** (2006) Naturally occurring bipartite strains of Bipartite begomoviruses affect some members of *Cucurbitaceae* family inside and outside the cotton zone in Pakistan. Presented as an oral presentation in an International conference on *Cucurbitaceae 2006* (Sep. 17-21) North Carolina State University, USA, *Cucurbitaceae* proceedings, **p** 527-533 .

38. Tahir, M., **Haider, M. S.** and Briddon, R. W. (2006) Presence of natural reservoir for "cottn leaf curl virus" outside the cotton growing region of Pakistan. Presented as poster presentation in "*20th IUBMB International Congress of Biochemistry and Molecular Biology and 11th FAOBMB Congress in Life: Molecular Integration & Bilogical Diversity"* held June 18-23, 2006, at Kayoto, Japan in Young Scientist Program.

39. Tahir, M., **Haider, M.S.** and Briddon, R. W. (2006) *Ageratum* enation virus causes yellow vein disease of *Sonchus oleraceus.* Presented as an oral presentation in *"Characterization and Management of Emerging Viral Diseases in the Developing World"* An International Symposium held Nov. 20-22, 2006 at NIBGE, Faisalabad, Pakistan.

40. Haider, M. S. and Tahir, M. (2005) A new species of Begomovirus infecting *capsicum annuum* grossum (Bell pepper) and prevalence of *Tomato leaf curl New Delhi virus* in *Momordica charantia* and *Eclipta prostrata* under natural conditions of Pakistan. Accepted as an oral presentation for '*2nd Joint Conference of the International Working Groups on Legume (IWGLV) and Vegetable Viruses (IWGVV)*' held April 10-14, 2005 in Fort Lauderdale, Florida, USA.

41. Tahir, M., **Haider, M.S**. and Briddon R. W. (2005) Naturally occurring bipartite strains of *Tomato leaf curl New Delhi virus* (ToLCNDV) affect *Luffa cylindrica* and *Momordica charantia* inside and outside the cotton zone in Pakistan. Presented as an oral presentation in "18th FAOBMB symposium on Genomics and Proteomics in Health and Agriculture" held November 20-23, 2005 at Aiwan-i-Iqbal, Lahore. Pakistan. p 102.

42. Tahir, M., Haider, Sabtian, Siddiqui, R. and **Haider, M. S.** (2005) Begomoviruses affecting an ornamental plant (*Pedilenthus tithymeloides* variegated) and oil seed crop (*Sesamum indicum*) under natural conditions of

Pakistan. Presented as an oral presentation in "*8th Biennial National Conference of Pakistan Society For Biochemistry and Molecular Biology*" held March 7-9 in University of Karachi, Pakistan. p 62.

43. Afghan, S, **Haider, M. S.**, Shah, A. H., Rashid, N., Iqbal, J., Tahir, M., Riaz, R., Altaf, M. and Akhtar, M. (2005) Cloning and sequencing of Sugarcane mosaic virus (SCMV) coat protein gene from naturally infected sugarcane crop in Pakistan. "*International Symposium on Plant Disease Management*" held December 20-22, 2005 at University of Karachi, Pakistan.

44. Haider, M. S., Liu, S., Evans, A. A. F. and Markham, P.G. (2003) Molecular and Biological properties of some begomoviruses from Pakistan. Presented as an oral paper in *Fourth National Conference of Plant Pathology*, 14-16 October, 2003 UAAR. *Plant Virology* p. 41.

15. Research projects being conducted or submitted as Principal or Co-Principal Investigator

Project Title	Duration	Total Amount Of Grant	Funding Agency
Development of Biosorption-Biodegradation System for the Removal of Dyes from Textile and Printing Industry Effluents by Saprophytic Fungi, White Rot Basidiomycetes and Plant Residues	3 years completed (2006-2009)	Rs. 4.3 Million	Higher Education Commission, Islamabad,. Pakistan (As Co-PI)
Novel approach to generate wide spectrum virus resistance to all cotton infecting begomoviruses infecting cotton and other cultivated crops.	7 years Completed (2009-2015)	Rs. 28.1 Million	Punjab Agricultural Research Board (PARB) (As PM/PI)
Molecular analyses of Potato virus Y infecting potato crop in different regions of Punjab.	1 years (2010-2011) Completed	Rs 0.25 Million	University of the Punjab, Lahore (As PI)
Genetic diversity of Entomopathogenic Fungi *Metarhizium* and *Beauveria spp*. isolated from the Soils of different Ecosystems (awarded vide Notification No. D/473/Est.I dated 25.01.2012)	1 year (2011-2012) Completed	Rs 0.25 Million	University of the Punjab, Lahore (As PI)
Impact assessment of water conservation and productivity enhancement through high efficiency irrigation system among vegetable growers of distt. Sheikhupura	9 months Completed	Rs.0.25 million	Higher Education Commission, Islamabad (As Co-PI)

Screening of diverse germplasm for the genetic studies of drought tolerance in rice (Oryza sativa L)	9 months (2012) Completed	Rs.0.5 Million	Higher Education Commission, Islamabad (As Co-PI)
Cotton productivity enhancement project, Virology Component	6 years (2011-2017) Work is in progress	US $ 0.3106	United States Department of Agriculture (As PI)
Diversity of endosymbiotic bacteria associated with *Bemisia tabaci* from Pakistan (awarded vide Notification No. D/5227/Est.I dated 13.02.2013)	1 year (2012-2013) Completed	Rs.0.250 Million	University of the Punjab, Lahore (PI)
Molecular and biological characterization of begomoviruses and/or associated DNA-satellites from the vicinity of University of the Punjab, Lahore, Pakistan	1 year (2013-2014) Completed	Rs.0.250 Million	University of the Punjab, Lahore (PI)
Investigation of *in planta* accumulation and localization of cotton leaf curl Kokhran virus (CLCuKoV) at tissue and cellular level.	1 year (2014-2015) Completed	Rs.0.250 Million	University of the Punjab, Lahore (PI)
The studies to control Jassid (*Amrsca* spp.) on the Brinjal (*Solanum melongena* L.) through bio-pesticides and habitat management in Lahore Division.	9 months Completed	Rs.0.50 million	Higher Education Commission, Islamabad (As Co-PI)
Biochemical remodulation mechanisms underlying effects of chickpea chlorotic dwarf virus on tomato plant that mediate transmission by leafhopper vectors	1 year (2015-2016) Ongoing	Rs.0.250 Million	University of the Punjab, Lahore (PI)

16. Advisory & Administrative Services

Director, Institute of Agricultural Sciences (IAGS), University of the Punjab, Lahore
Convener, Doctoral Program Committee, IAGS, University of the Punjab, Lahore
Chairman, Board of Studies, IAGS, University of the Punjab, Lahore
Member Curricula Plant Pathology (Virology) Committee for Universities
Member, Technical Organizing Committee, 5th Meeting of the Asian Cotton Research and Development Network, held Feb. 23-25, Pearl Continental Hotel, Lahore, Pakistan

Member Board of Studies of Faculty of Life Sciences
Off-Site Invigilator, York University, Toronto, Ontario, Canada
Editor-In-Chief, Mycopath, IAGS, Punjab University, Lahore
Technical Editor, Mycopath Virology Section

Chairman, Purchase & Technical Committee of IAGS

17. Accession Numbers obtained for the sequences submitted to the DNA database.

Accession No(s):

Accession#: HE802675
Status: confidential until 31-DEC-2012
Description: Rabies virus complete genome, viral cRNA, isolate Pk 23

Accession#: HE802676
Status: confidential until 31-DEC-2012
Description: Rabies virus complete genome, viral cRNA, isolate Pk 24

Accession#: HE801592
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 294

Accession#: HE801593
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 19

Accession#: HE801594
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 20

Accession#: HE801595
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 21

Accession#: HE801596
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 22

Accession#: HE801597
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 25

Accession#: HE801598
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 26

Accession#: HE801599
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 27

Accession#: HE801600
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 55

Accession#: HE801601
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 56

Accession#: HE801602
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 57

Accession#: HE801603
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 58

Accession#: HE801604
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 59

Accession#: HE801605
Status: confidential until 31-DEC-2012
Description: Rabies virus G-L intergenic spacer, genomic RNA, isolate Pk 60

Accession#: HE801606
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Description: Rabies virus G gene for glycoprotein, genomic RNA, isolate Pk 19

Accession#: HE801607
Status: confidential until 31-DEC-2012
Description: Rabies virus G gene for glycoprotein, genomic RNA, isolate Pk 20

Accession#: HE801608
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Status: confidential until 31-DEC-2012
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Accession#: HE801614
Status: confidential until 31-DEC-2012
Description: Rabies virus G gene for glycoprotein, genomic RNA, isolate Pk 56

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Description: Rabies virus G gene for glycoprotein, genomic RNA, isolate Pk 58

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Status: confidential until 31-DEC-2012
Description: Rabies virus G gene for glycoprotein, genomic RNA, isolate Pk 59

Accession#: HE801618
Status: confidential until 31-DEC-2012
Description: Rabies virus G gene for glycoprotein, genomic RNA, isolate Pk 60

Accession#: HE801619
Status: confidential until 31-DEC-2012
Description: Rabies virus L gene for RNA dependent RNA polymerase, genomic RNA,
isolate Pk 294

Accession#: HE801620
Status: confidential until 31-DEC-2012
Description: Rabies virus L gene for RNA dependent RNA polymerase, genomic RNA,
isolate Pk 19

Accession#: HE801621
Status: confidential until 31-DEC-2012

Description: Rabies virus L gene for RNA dependent RNA polymerase, genomic RNA,
isolate Pk 20

Accession#: HE801622
Status: confidential until 31-DEC-2012
Description: Rabies virus L gene for RNA dependent RNA polymerase, genomic RNA,
isolate Pk 21

Accession#: HE801614
Status: confidential until 31-DEC-2012
Description: Rabies virus G gene for glycoprotein, genomic RNA, isolate Pk 56

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Accession#: HE801616
Status: confidential until 31-DEC-2012
Description: Rabies virus G gene for glycoprotein, genomic RNA, isolate Pk 58

Accession#: HE801617
Status: confidential until 31-DEC-2012
Description: Rabies virus G gene for glycoprotein, genomic RNA, isolate Pk 59

Accession#: HE801618
Status: confidential until 31-DEC-2012
Description: Rabies virus G gene for glycoprotein, genomic RNA, isolate Pk 60

Accession#: HE801619
Status: confidential until 31-DEC-2012
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isolate Pk 294

Accession#: HE801620
Status: confidential until 31-DEC-2012
Description: Rabies virus L gene for RNA dependent RNA polymerase, genomic RNA,
isolate Pk 19

Accession#: HE801621
Status: confidential until 31-DEC-2012
Description: Rabies virus L gene for RNA dependent RNA polymerase, genomic

RNA,
isolate Pk 20

Accession#: HE801622
Status: confidential until 31-DEC-2012
Description: Rabies virus L gene for RNA dependent RNA polymerase, genomic RNA,
isolate Pk 21

Accession#: HE801632
Status: confidential until 31-DEC-2012
Description: Rabies virus L gene for RNA dependent RNA polymerase, genomic RNA,
isolate Pk 60

Accession#: HE801579
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 19

Accession#: HE801580
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 20

Accession#: HE801581
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 21

Accession#: HE801582
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 22

Accession#: HE801583
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 25

Accession#: HE801584
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 26

Accession#: HE801585
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 27

Accession#: HE801586
Status: confidential until 31-DEC-2012

Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 55

Accession#: HE801587
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 56

Accession#: HE801588
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 57

Accession#: HE801589
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 58

Accession#: HE801590
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 59

Accession#: HE801591
Status: confidential until 31-DEC-2012
Description: Rabies virus N gene for nucleoprotein, genomic RNA, isolate Pk 60

Accession#: FR772081
Description: Hollyhock yellow vein mosaic virus, complete genome, isolate [Pakistan:17-5:06] Lahore10

Accession#: FR772082
Description: Hollyhock leaf curl virus, complete genome, isolate [Pakistan:20 4:06] Faisalabad3

Accession#: FR772083
Description: Cotton leaf curl Multan virus betasatellite, isolate [Pakistan:20 4:06] Faisalabad1

Accession#: FR772084
Description: Gossypium darwinii symptomless alphasatellite, isolate [Pakistan:20 4:06] Faisalabad2

Accession#: FR772085
Description: Ageratum conyzoides associated symptomless virus alphasatellite, isolate [Pakistan:17-5:06] Lahore1

Accession#: FR772086
Description: Hollyhock yellow vein virus associated symptomless alphasatellite, isolate [Pakistan:17-5:06] Lahore2

Accession#: FR772087
Description: Gossypium mustilinum symptomless alphasatellite, isolate [Pakistan:17-5:06] Lahore3

Accession#: FR772088
Description: Sida leaf curl virus-associated DNA 1, isolate [Pakistan:17-5:06] Lahore4

Accession#: FR772089
Description: Cotton leaf curl Burewala alphasatellite, isolate [Pakistan:17 5:06] Lahore5

Accession#: FR772090
Description: Cotton leaf curl Burewala alphasatellite, isolate [Pakistan:17 5:06] Lahore6

Accession#: FR772091
Description: Cotton leaf curl Burewala alphasatellite, isolate [Pakistan:17 5:06] Lahore7

Accession#: FR772092
Description: Gossypium darwinii symptomless alphasatellite, isolate [Pakistan:17 5:06] Lahore9

Accession#: FR750318
Description: Cotton leaf curl Burewala virus complete genome, clone MV12

Accession#: FR750319
Description: Cotton leaf curl Burewala virus complete genome, clone MV2A

Accession#: FR750320
Description: Cotton leaf curl Burewala virus complete genome, clone MV2B

Accession#: FR750321
Description: Cotton leaf curl Burewala virus complete genome, clone MV15

Accession#: FR750322
Description: Cotton leaf curl Burewala virus complete genome, clone MV16

Accession#: FR750323
Description: Cotton leaf curl Burewala virus complete genome, clone MV18A

Accession#: FR750324

Description: Cotton leaf curl Burewala virus complete genome, clone MV18B

Accession#: FR715681
Description: Malvastrum yellow vein Changa Manga virus complete sequence, clone MV10

Accession No. **FN678906**
Description: Croton yellow vein mosaic virus, complete genome sequence, clone HYDNA A

Accession No: **FN678779**
Description: Cotton leaf curl Multan betasatellite, complete sequence, clone HYBETA

Accession No. **AM261836**
Description: Ageratum enation virus complete genome

Accession No. **AM258977**
Description: Tomato leaf curl New Delhi virus, complete genome

Accession No. **AM258978**
Description: Chilli leaf curl virus satellite DNA beta, complete sequence

Accession No. **AM260465**
Description: Tobacco leaf curl virus C1 gene

Accession No. **AM260466**
Description: Bell pepper leaf curl virus C1 gene

Accession No. **AM392426**
Description: Tomato leaf curl New Dehli virus [Multan;Duranta repens] segment B, complete viral segment

Accession No. **AM292302**
Description: Tomato leaf curl New Dehli virus-[Multan;Luffa] V2 gene, AV3 gene, CP gene, AC1 gene, REn gene, TrAP gene, AC4 gene and AC5 gene

Accession No. : **AM286794**
Description: Squash leaf curl China virus - [Cucurbita pepo: Lahore] AV2 gene, CP gene, AC1 gene, TrAP gene, ReN gene, AC4 gene and AC5 gene

Accession No. : **AM292303**
Description: Papaya leaf curl virus [vinca;Lahore] partial CP gene for Coat protein

Accession No. **AJ 810825**

Description: Ageratum yellow vein virus-Pakistan, V2 gene for coat protein

Accession No. **AJ 854186**

Description: Tomato leaf curl New Delhi virus (Bitter Gourd), V2 gene for coat protein

Accession No. **AJ 889185**

Description: Tomato leaf curl New Delhi virus (Eclipta prostrata) V2 gene for coat protein

Accession No. **AM 040436**

Description: Sugarcane mosaic virus (SCMV) coat protein gene (Bundaberg isolate)

Accession No. **DQ648195**

Description: Sugarcane mosaic virus (SCMV) coat protein gene (Brisbane isolate)

Accession No. **AM 040437**

Description: Solanum Yellow leaf curl virus (SYLCV) V2 gene for coat protein

Accession No. **AM 040438**

Description: Zinnia leaf curl virus (ZLCV) V2 gene for coat protein.

Accession No. **AM117759**

Description: Cotton leaf curl virus (Sonchus) C1 gene for replication.

Accession No. **AM491589**

Description: Pepper leaf curl Bangladesh virus V2 gene, CP gene, TrAP gene, REn gene, C1 gene and C4 gene, segment A, complete sequence

Accession No. **AM491590**

Description: Tomato leaf curl New Delhi virus CP gene, V3 gene, V2 gene, REn gene, C2 gene, C1 gene and C4 gene, segment A, complete sequence