

**CURRICULUM VITAE**  
**SAIFULLAH KHAN**

**PERSONAL DETAILS**

**Father's Name:** Fayyaz Ali Khan  
**Date of Birth:** July 01, 1967, Bahawalpur (Pakistan)  
**Marital status:** Married  
**N.I.C. Number:** 42501-2782657-5  
**Citizenship:** Pakistani  
**Present Position:** Assistant Professor and Incharge, Plant Tissue Culture and Biotechnology Section, International Center for Chemical and Biological Sciences, H.E.J. Research Institute of Chemistry, University of Karachi Karachi 75270 **Fax:** (92-21) 481 9018-9  
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**ACADEMIC PROFILE**

QUALIFICATIONS	MARKS / CGPA / %age	DISTINCTIONS	INSTITUTION AND SUBJECTS
Ph.D.	-----	Merit Scholarship	University of Edinburgh UK Plant Biotechnology
M.Sc.(Hons)* Agriculture	3.69/4.00 (77.20%)	Merit Scholarship	University of Agriculture, Faisalabad Plant Breeding and Genetics
B.Sc. (Hons)** Agriculture	3.60/4.00 (75.39%)	Merit Scholarship	University of Agriculture, Faisalabad Plant Breeding and Genetics
H.S.C. (Pre-Medical)	(59.9%)	-----	Board of Intermediate and Secondary Education Bahawalpur (Pre-Medical)
S.S.C. Matriculation	75.76%	Merit Scholarship	Board of Intermediate and Secondary Education Multan

\* Two year degree

\*\* Four year degree

**DISSERTATION TITLE**

**Ph.D.** Variation arising through tissue culture in Soft fruits

**M.Sc. Hons.** Gene action studies of some morphological and other important traits in cotton  
(*Gossypium hirsutum L*)

## WORK EXPERIENCE

- Presently working as an **Assistant Professor** and **In-charge** Plant Biotechnology Section at the International Center for Chemical and Biological Sciences, H.E.J. Research Institute, University of Karachi.
- Established an efficient and economical plant cell and tissue culture facility, starting from designing the lab, refurbishing, and purchasing, establishing protocols of various plant species. This is the largest tissue culture facility in the country.
- Optimized protocols and established various plants under *in-vitro* conditions, including Orchids, Bananas, Ixora, Pineapples, Dracaena, Lily, African violet, Ferns, Chrysanthemum, Jack fruit, Tulip, Farcaria, Date Palm and many more.
- **Cell Culture Facility**: Developed various ornamental as well as medicinal plants calli and cell suspensions for the study on secondary metabolites and biotransformation. These include Kiwifruit, Aloe vera, Mint spp. Ocimum., Neem, Croton, Hermal, Euphorbia, Catharanthus spp. etc.

### Floriculture:

- Established Green house grown cut flower **Orchids** and **Anthurium**, first and the only pilot scale **Orchid farm** in the country,
- **Production of field cut flowers**, Tube roses, Roses, Jasmines and Hibiscus.
- Established first and the only Anthurium Cut flower Pilot Scale Farm in the country based on Hydroponics.
- Working on **Hydroponics** and off-season production of economically important horticultural crops.
- Formulated various foliar fertilizer based on local salts to use them in hydroponics which include Greener, Bloomer, Stress supplement and Magic greener.

## TEACHING EXPERIENCE

- **Feb. 1998 - 2005** Taught a number of postgraduate courses in the Department of **Biotechnology**, University of Karachi. These includes Plant Tissue Culture and Regeneration, Agriculture Biotechnology, Fresh water Fish farming, Hydroponics and Nutrient Film Techniques.
- Nine Post Graduate Research students are enrolled for their Post graduate leading to Ph.D. degree.

S.No.	Name of Student	Title of Synopsis	Status
1	Miss Bushra Ahmad Saeed	<i>In-vitro</i> Selection and Evaluation of the Genetic Purity of Regenerated Banana Plants	Ph.D. Thesis Submitted
2	Mrs. Asma Nasib	Production of secondary metabolites from medicinally important plants using plant tissue culture technology	Converted to Ph.D.
3	Mr. Saifullah	Biotransformation of commercially and medicinally important natural products using plant cell suspension cultures	Converted to Ph.D.
4	Mrs. Mariam Iftikhar	<i>In-vitro</i> propagation, differentiation and	Conversion

		acclimatization of Fern, <i>Asplenium Nidus</i>	Submitted
5	Mrs. Zarreen Badar	Enhanced production of Aloemmannan and other constituents using Plant Biotechnology	Admitted to M.Phil.
6	Miss Sheeba Naz	Application of Plant Cell Cultures for the biotransformation of Terpenes	Admitted to M.Phil.
7	Miss Naheed Kauser	Production of Therapeutic agents from Plants using DNA recombinant technology	Admitted to M.Phil.
8	Mr. Hammad Afzal Kayani	Biotransformation of Terpenes using Medicinal Labiates and fusion effect on the products	Admitted to M.Phil.
9	Mr. Kashif Ali	Biotechnological approaches for the production of secondary metabolites of medicinally important <i>Euphorbia</i> spp.	Admitted to M.Phil.

• **M.Sc. Research Theses :**

S.No.	Name of Student	Title of Theses	Year
1	Mr. Hammad Afzal Kayani	<i>In-vitro</i> studies of Ferns	2005
2	Mr. Kashif Ali	<i>In-vitro</i> studies of Croton ( <i>Codiaeum variegatum</i> )	2005
3	Miss. Ambreen Ansari	<i>In-vitro</i> studies of Banana and some ornamental plants	2003
4	Miss. Mussarat Ashraf	<i>In-vitro</i> studies of Date Palm ( <i>Phoneix dactylifera L.</i> ) and some ornamental plants	2003

• **M.Sc. Research Projects:**

S.No.	Name of Student	Title of Projects	Year
1	Mr. Mudassir Nazir	Evaluation of different media for the micropropagation of economically important plants	2003
2	Miss. Samreen Zehra	Evaluation of various alternatives to make Plant Tissue Culture more economically viable	2003

**RESEARCH TECHNIQUES AND SKILLS**

Various molecular techniques are routinely in use in the lab. These include:-

- DNA extraction from various parts of plants and calli using different protocols including "mini and maxi prep".
- PCR (Polymerase Chain Reactions), RAPD PCR, (Random Amplified Polymorphic DNA).
- AFLP (Amplified Fragment Length Polymorphism), Microsatellites SSR (Simple sequence Repeats) and PCR based disease diagnostics.
- SDS-PAGE and Starch Gel Electrophoresis for Protein and Isoenzyme Electrophoresis.

- Various molecular techniques like DNA cloning, DNA fingerprinting, DNA sequencing, Recombinant DNA technology, transformation using Biolistic gun, electroporation and Agrobacterium.
- ELISA in routine as a diagnostic tool to index plants.
- Cell suspension culture and biotransformation technology.
- Protoplast isolation and somatic hybridization.
- Various staining techniques of Protein Gels i.e. Coomassie Blue, silver staining and for Agarose gels Ethidium bromide and silver staining prepared indigenously in the lab.
- A very efficient and economical silver staining protocol has been developed in the lab using basic salts.
- Somatic embryogenesis is routinely being used in the lab as an alternative method of propagation.
- Software utility--Microsoft Office, Statistical packages for analysis of data (Statgraph, Minitab), Gel documentation system. Molecular data analysis programs, RAPDistance, Phylip 3.5 and other routine programs.

### **ADMINISTRATIVE RESPONSIBILITIES**

- Provost post graduate Boys hostel of ICCBS since 2005.
- Member purchase committee of the ICCBS since 2004.
- Member organizing committee of various International Workshops, Symposia and Conferences and organized more than 20 International events in the Institute.
- In charge Green houses, Cut Flower Production, Nurseries and Hydroponics.
- In charge Air-conditioning and Carpentry maintenance work of the ICCBS Complexes.
- Working as an Assistant transport In charge for the ICCBS complexes.
- Member Departmental Inquiry Committee and conducted various inquiries.

### **MEMBERSHIP OF SCIENTIFIC ORGANISATIONS AND HONOURS**

- Chawala Kissan Time prestigious award for **Best Tissue Culturist in Pakistan 2004**.
- Member of the Society for *in-vitro* Biology, USA (SIVB).
- Member of the Genetical Society, UK.
- Member of the International Society for Horticulture Sciences (ISHS), Belgium.
- Life-time member of the Horticulture Society, Pakistan.
- HEC Approved Ph.D. supervisor.
- Appointed and working as an external examiner for conducting viva voce examination for Ph.D. students in School of Biological Sciences, Punjab University, Lahore, Pakistan.
- Member, Banana Research Information System (BRIS), Belgium.
- Life time member of the Pakistan Botanical Society.
- Life time member of Bazm-e-Sciencea Adab.

- Member Pakistan National Committee for International Union for Conservation for Natural resources
- HEC Text Book reviewer on Plant Biotechnology.
- Technical reviewer of various research projects funded by various Governmental Organizations such as Higher Education Commission, Pakistan Science Foundation, Ministry of Science and Technology, and Pakistan Telecommunication Limited.
- Technical evaluator of Manuscripts of Pakistan Journal of Scientific and Industrial Research, Research Journal, University of Balochistan, Quetta, Pakistan Journal of Agriculture, Agriculture Engineering and Veterinary Science, Tandojam and Pakistan Journal of Botany.

### **MEMBER BOARD OF STUDIES**

- Working as an Adviser for Pakistan Biotechnology Information Center (PABIC).
- Member Board of Advance Studies, Center for Advance Studies in Biotechnology at Sindh University, Jamshoro.
- Member Board of Studies of the Department of Biotechnology, Sindh Agriculture University, Tandojam.
- Member of various groups on specific crops constituted by The Agriculture Department Government of Sindh. The main activities of this very high level expert group are

To formulate policy suggestion and recommendations to optimize productivity, assessment plan and varieties, introduction of new technology and management practices to ensure transparency and optimum use of public human, financial and material resource, generate public private partnership in research activities and encourage institutional linkages at regional, national and international level, arrange and conduct performance audit of research/extension activities, constitute sub-committees pertaining to research, extension and marketing to monitor phyto-seniority condition and other related issues of WTO, to suggest measures for capacity building of stake holders, review research and extension plans/activities and provide guide line for improvement, review the availability of all inputs including water. Member of the following groups.

**Sindh Banana Development Group**  
**Sindh Dates Development Group**  
**Sindh Mango Development Group**  
**Sindh Chilies Production Group**

## **SHORT TRAINING AND COURSES**

- 2007** Participated as an Advisor in an International media workshop on **Innovative aspects of Biotechnology and its better awareness and Dissimination** in *Islamabad*, Pakistan March 12-14
- 2007** Participated on behalf of Director PABIC in the **Annual meeting of the International Biotechnology Information Centre supported by ISAAA** in *Jakarta*, Indonesia Feb.7-8
- 2006** Participated in **International HortiFair** and visited **Anthura B.V., Production Houses** at *Amsterdam*, The Netherlands Nov.1-6.
- 2005** Visit to **Ashu Flower Limited** for sharing the experience of large scale commercial Floriculture farm and their management in *Thika*, Kenya Dec 20-08 Jan'06.
- 2005** International workshop on **Plant Biotechnology, A New promise for sustainable development** at National Research Centre (NRC) in *Giza*, Egypt, December 3-5.
- 2005** International training course on **Plant Tissue Culture and Transformation Techniques** at Agriculture and Genetic Engineering Research Institute (AGERI) in *Giza*, Egypt April 2-13.
- 2004** Participated in **WESCANA (West, Central Asia and North Africa) Regional Conservation Forum (RCF)-IUCN** meeting at *Amman*, Jordan April 5-7.
- 2004** Visit to **T.K. Nurseries** and various other Orchid cut flower farms to share the experience of cut flower production and processing *Pathumthani*, Thailand, Feb 7-13.
- 2003** Participated in 4 week training in Tunisia at **Date palm and Olive Research Institute** in *Safax, Degashe*, and in Tunisia Oct 13- Nov 03.
- 2003** Participated in the **1<sup>st</sup> International Symposium on Human Genome Organisation** at *Shangai*, China April 2-4.
- 2001** Actively participated in an **International workshop on Novel Genetic Markers for crop improvement** organised by International Center for Genetic Engineering and Biotechnology (ICGEB) at University of Dhaka, *Dhaka*, Bangladesh November 4-13.
- 1998** Attended and successfully completed the ICGEB practical course on **Application of Biotechnology in Agriculture** Organized by ICGEB at NIBGE, *Faisalabad*, Pakistan February 16-27.
- 1997** Participated in workshop on **Transposable Elements** organized by Genetical Society at the University of Dundee, *Dundee*, U.K.
- 1996.** Successfully completed a course on **Radiation Protection in Laboratory work in Science and Medicine** *Edinburgh*, UK.
- 1996** Training at Long Austin Research Institute on **The methodology of AFLP (Amplified Fragment Length Polymorphism) technique and its uses as genetic markers** at *Bristol*, UK February 15-28

1995 Attended Royal Society meeting on **Control of Development in Higher Plants**, London, UK.

### INTERNATIONAL TRAVEL

<b>Bahrain</b>	<b>Tunisia</b>	<b>Netherlands</b>
<b>Bangladesh</b>	<b>Jordan</b>	<b>Saudia Arabia</b>
<b>China</b>	<b>Kenya</b>	<b>Thailand</b>
<b>Egypt</b>	<b>Kuwait</b>	<b>Indonesia</b>
<b>France</b>	<b>United Kingdom</b>	<b>United Arab Emirates</b>

### PROJECTS EXECUTED

<b>Period</b>	<b>Name of the Project</b>	<b>Status</b>
1998-99	Commercial production of Ornamental Plants using Tissue Culture Technology.	Completed P.I.
2002-03	Mass scale production of Pineapple plants using Tissue Culture Technology.	Completed P.I.
2002-04	Mass multiplication of virus and disease free Banana and Orchid plants using Tissue Culture technology.	Completed P.I
2003-05	The use of DNA fingerprinting to evaluate the genetic stability of Banana plants produced via <i>in-vitro</i> culture.	Completed P.I
2003-04	Establishment of model Hydroponics culture system for the cultivation of Pineapples and some other important cut flowers.	Completed P.I
2004-06	Establishment of Tissue Culture Technology Park in the University of Karachi.	Approved and under execution P.I
2004-05	Establishment of Medicinal Plant Collection and Processing Facility at New Murree.	Approved and under execution Co-P.I
2005-2008	Establishment of research and development facilities for Exotic Cut flower and value added products.	Approved and under execution P.I.
2005-2006	Application of the Biotransformation techniques to produce value added compounds using plant cell cultures.	Approved and under execution P.I.
2005-2007	Isolation of structurally novel and pharmacologically potent compounds from plant cell suspension cultures.	Approved and under execution.

		Co-P.I.
2005-2007	Development of economical protocols for the pilot scale production of elite date palm cultivars using plant tissue culture technology.	Approved and under execution P.I
2006-2008	Micropropagation and cultivation of some economically important plants. (Collaborative Project at BUITMS, Floriculture Cell Governor House, Balochistan and ICCBS Karachi University)	Approved and under execution Co P.I

## **LIST OF PUBLICATIONS:**

### **PUBLISHED:**

**KHAN, S., NAZ, S., ALI, K., AND ZAIDI, S.** (2006) Direct organogenesis of *Kalanchoe tomentosa* (Crassulaceae) from Shoot tips. *Pakistan Journal of Botany* 38(4), 977-981.

NASIB, A., MUSHARRAF, S.G., HUSSAIN, S., **KHAN, S.**, ANJUM, S., ATTA-UR-RAHMAN AND CHOUDHARY, M. I. (2006). Biotransformation of (-)-Ambrox by Cell Suspension Culture of *Actinidia deliciosa*. *Journal of Natural Products*, 69(6), 957-959.

CHOUDHARY, M. I., SIDDIQUE, Z. A., **KHAN, S.**, SAIFULLAH, MUSHARRAF, S.G. AND ATTA-UR-RAHMAN (2006) Biotransformation of (-)-Caryophyllene oxide by Plant Cell Culture of *Catharanthus roseus*. *Z. natureforsch.* B,61b, 197-200.

**KHAN, S., A. NASIB AND BUSHRA. S.** (2005). Pineapple propagation: Pakistan's new venture. *Pineapples News*, International Society for Horticultural Science (12): 20-23.

**KHAN, S., AND SPOOR, W.** (2004). A study of an *in-vitro* callus culture and regeneration system from leaf disc explants in strawberry (*Fragaria ananassa*) CV Tango. *International Journal of Biology and Biotechnology* (3): 423-428.

**KHAN, S., A. NASIB AND BUSHRA. S.** (2004). Employment of *in-vitro* technology for large scale multiplication of Pineapples (*Annanas Comosus*). *Pakistan Journal of Botany*. 80(4), 1038-1045.

**KHAN, S., M. IFTIKHAR AND BUSHRA. S.** (2004). An economical and efficient method for mass propagation of *Ixora Coccinea*. *Pakistan Journal of Botany*. 36(4), 751-756.

**KHAN, S., S. NAZ AND BUSHRA. S.** (2004). *In-vitro* production of *cordylines terminalis* for commercialization. *Pakistan Journal of Botany*. 36(4) 757-761.

**KHAN, S., AND SPOOR, W.** (2001). Use of molecular and morphological markers as a quality control in plant tissue culture. *Pakistan Journal of Biological Sciences* 4 (4):479-482.

**KHAN, S., AND SPOOR, W.** (2001). Evaluation of genetic stability in the black currant plants regenerated via micropropagation using RAPD-PCR techniques. *Pakistan Journal of Botany* 33(4):411-417.

**KHAN, S., ZAFAR, Y., YASMEEN A., AND BUSHRA, S.** (2001). An efficient and economical method of mass multiplication of virus and disease free banana using plant tissue culture techniques. *Pakistan Journal of Biological Sciences* 4(5) 562-563

**KHAN, S., AND SPOOR, W. (2000).** Evaluation of different explant sources and growth regulators on callus culture and regeneration in strawberry (*Fragaria ananassa*) *Pakistan Journal of Biological Sciences* 3 (12): 2249-2250.

AYOUB, R., ZAREEN, A., ZAKI, M. J., AND **KHAN, S. (1999).** Female parasitism of *Aspergillus* species and their effect on root penetration by root-knot nematode *Meloidogyne javanica*. *Pakistan Journal of Phytopathology*. 12(2): 115-117.

### **PAPERS SUBMITTED:**

**KHAN, S., IFTIKHAR, M., KAYANI, H. A.** *In-vitro* propagation and differentiation of Bird's Nest Fern (*Asplenium nidus*). *In-vitro Cellular and developmental Biology, Plant Journal* (submitted)

NASIB, A., ALI, K., AND **KHAN, S.** An optimized and improved method for the *In-vitro* propagation of Kiwifruit (*Actinidia deliciosa*) using coconut water. *Pakistan Journal of Botany* (submitted).

NASIB, A., ALI, K., AND **KHAN, S.** *In-vitro* propagation of Croton (*Codiaeum variegatum*). *Pakistan Journal of Botany* (submitted).

**KHAN, S., BADAR, Z., ALI, K., MUSARRAF, S.G. AND CHOUDHARY, M. I.** Evaluation of the Effect of Light and Plant Growth Regulators on Callus Induction, Plant Regeneration and Study of Biotransformation ability in *Aloe barbadensis* Mill. *In-vitro Cellular and developmental biology, Plant Journal* (submitted).

### **POSTERS PRESENTED:**

Biotransformation of (-)-Ambrox using *Actinidia deliciosa* at the **AFERP International days and 2<sup>nd</sup> Pak-France Binational workshop** at Agrocampus, Rennes, France Oct.26-30, 2006.

Characterization of different exotic fern cultivars regenerated *In-vitro* employing SDS-PAGE at **8<sup>th</sup> International Symposium on Protein Structure Function Relationship** Organized by International Center for Chemical Sciences, HEJ Research Institute of Chemistry University of Karachi, Pakistan Jan. 7 -10, 2005.

ELISA based assessment of the diseased free tissue cultured Banana plants at **8<sup>th</sup> International Symposium on Protein Structure Function Relationship** Organized by International Center for Chemical Sciences, HEJ Research Institute of Chemistry University of Karachi, Pakistan Jan. 7 - 10, 2005.

*In-Vitro* propagation and differentiation of Fern. (*Asplenium nidus*) at 7<sup>th</sup> International Conference "**Trends in Biochemistry and Molecular biology**" organized by Institute of Biochemistry and Biotechnology, University of Punjab, Lahore, Pakistan. April 2-5, 2003.

Virus Eradication *In-vitro* Plant cell culture and certification through Enzyme Linked immunosorbent assay (ELISA) at **7<sup>th</sup> International Symposium on Protein Structure Function Relationship** Organized by International Center for Chemical Sciences, HEJ Research Institute of Chemistry, University of Karachi, Karachi, Pakistan Jan. 20-24, 2003.

An economical and efficient method for large scale propagation of Banana plants in **7<sup>th</sup> Eurasia Conference on Chemical Sciences** Organized by International Center for Chemical Sciences, HEJ Research Institute of Chemistry, University of Karachi, Karachi, Pakistan March, 9-12, 2002.

Micropropagation of *Codiaeum variegatum Pictum* (Croton), A Medicinally important Ornamental Plant in **7<sup>th</sup> Eurasia Conference on Chemical Sciences** Organized by International Center for Chemical Sciences, HEJ Research Institute of Chemistry, University of Karachi, Karachi, Pakistan March. 9-12, 2002.

An economical and efficient method for the large scale propagation of *Dracaena* cultivars in **7<sup>th</sup> Eurasia Conference on Chemical Sciences** Organized by International Center for Chemical Sciences, HEJ Research Institute of Chemistry, University of Karachi, Karachi, Pakistan March, 9-12, 2002.

Use of Molecular Markers for quality control measures in commercially micropropagated cultivars of soft fruits at the **1<sup>st</sup> International conference on Biotechnology application for the arid regions** at *KISR*, Kuwait 9-11 April, 2001.

*In-vitro* propagation of Banana (cv. Cavendish Basri) in **4<sup>th</sup> International Plant Tissue Culture Conference** at *Dhaka*, Bangladesh 1-3 November, 2001.

The exploitation of Plant Tissue Culture Technology for the large scale propagation of virus free banana plants in **8<sup>th</sup> International symposium on Natural Product Chemistry** at *Karachi*, Pakistan, Jan.18-22, 2000.

RAPD-PCR technology as an aid to evaluate the genetic integrity of plants regenerated via leaf disc callus of strawberry (*Fragaria ananassa Duch.*) in **Genetical Society Symposium** at *Edinburgh*, UK, 1996.

### **PAPERS PRESENTED:**

The use of SSR's and RAPD's for the evaluation of the genetic stability of tissue cultured Banana plants in **Biotechnology and sustainable developments: Current status and Future Scenarios** at *Cairo*, Egypt 11-14 Dec. 2006

Biotransformation of (-)-Ambrox using *Actinidia deliciosa* cell cultures in **Emerging Technologies and Developing Countries** Organized by COMSATS at Islamabad, Pakistan 28-29 Nov. 2006.

Micropropagation of *Anthurium andreanum* A boom in cut flower industry in **Two day consultative workshop on R&D in Horticulture sector** organized by Pakistan Horticulture and Developmental Board at Islamabad, Pakistan 28-29 Nov. 2006

The successful cultivation of Orchids and other economically important crops in HEJ Research Institute of Chemistry in **Emerging Technologies and Developing Countries** organized by COMSATS at Islamabad, Pakistan 28-29 Nov. 2006.

Role of Biotechnology work at HEJ Research Institute related to economic prosperity in the region in **National Symposium on Biotechnology for economic prosperity** Organized by National Commission on Biotechnology and Ministry of Science and Technology at *Nathiagali*, Pakistan, 24-26 July, 2006.

Effect of Coconut milk on micropropagation of kiwifruit, *Actinidia deliciosa* in **1<sup>st</sup> International and National Symposium on Biotechnology** at Jamshoro, Pakistan 22-23 March, 2003

*In-vitro* propagation and commercialization of *Kalanchoe tomentosa* in **1<sup>st</sup> International and National Symposium on Biotechnology** at Jamshoro, Pakistan 22-23 March, 2003

Role of Biotechnology for poverty alleviation in **Poverty Alleviation through sustainable Agricultural development** organized by the Department of Biotechnology, **Agriculture University Peshawar** at *Baragali*, Pakistan 25-27 July, 2002.

An Efficient and economical method for the rapid micropropagation of *Codiaeum variegatum pictum* in **4<sup>th</sup> International Plant Tissue Culture Conference** held in Dhaka, Bangladesh 1-3 November, 2001.

Establishment of *in-vitro* method for the efficient mass propagation of *Cordyline terminalis* in **4<sup>th</sup> International Plant Tissue Culture Conference** held in Dhaka, Bangladesh 1-3 November, 2001.

Use of Molecular Markers for quality control measures in commercially micropropagated cultivars of soft fruits in **4<sup>th</sup> International Plant Tissue Culture Conference** at *Dhaka*, Bangladesh 1-3 November, 2001.

The exploitation of plant tissue culture technology for large scale multiplication of disease and virus free plants in **Biotechnology for Development** organized by COMSTECH-ISESCO-IDB-INOGE at Islamabad, Pakistan, 25-27 January, 2000.

### **POPULAR LECTURES AND INTERACTION WITH THE MEDIA:**

Balochistan University of Information Technology and Management Sciences, Quetta: Biotechnology, Its application for economic prosperity.

Sindh University, Jamshoro: Eradication of banana bunchy top virus using tissue culture technology.

Department of Botany, University of Karachi: Construction of Phylogeny based on DNA Finger Printing, its role in evolution studies.

Department of Microbiology, University of Karachi: Cell and Tissue Culture Technology, its application in Research.

Ladies Horticultural Club, Karachi: Plant Tissue Culture Technology, its application in Ornamental industry.

Orchid Society of Pakistan, Karachi: Establishment of First National Orchid farm a success story.

Cactus Society of Pakistan, Karachi: Role of Plant Tissue Culture Technology in Propagation of Cactus and other endangered plant species.

National Fertilizer Company, Thatta: Tissue culture plants and Sustainable Banana Production Technology.

Sindh University, Jamshoro: Role of Genetic Engineering (GMOs) in Gene revolution and food safety.

UAAR: Use of DNA fingerprinting technique to ensure genetic stability of Banana produced via *In-vitro* culture.

Attended as an Expert Guest speaker and discussed key matters like Banana Bunchy Top Virus, Pineapple Propagation, Orchid Production, Hydroponics, Plant Diseases, Mushroom Cultivation, Banana Production Technology, Role of Biotechnology in Poverty Alleviation in **PTV-2**, **PTV**, and **PTV World Live** and recorded in *Razi Haider Shah* program and at **KTN**.