# ANNUAL REPORT

# 2008 - 2009


**Pakistan Science Foundation**

**Islamabad**

# ANNUAL REPORT

# 2008-2009

**PAKISTAN SCIENCE FOUNDATION**
**1 - Constitution Avenue**
**Islamabad**

# PAKISTAN SCIENCE FOUNDATION

## CHAIRMAN

| | |
|---|---|
| Dr. N. M. Butt, *S.I.* | (upto 12-08-08) |
| Dr. S. Azhar Hassan | (From 13-08-08) |

## EXECUTIVE COMMITTEE

| | |
|---|---|
| Dr. N. M. Butt, S.I. | Chairman (upto 12-08-08) |
| Dr. S. Azhar Hassan | (From 13-08-08) |
| Dr. S. Azhar Hassan | Member (Science) |
| Syed Ghulam Husnain Bokhari | Director (Finance) |

## BOARD OF TRUSTEES

**Three whole-time Members appointed by the President:**

| | |
|---|---|
| Dr. N. M. Butt, S.I. | Chairman (upto 12-08-08) |
| Dr. S. Azhar Hassan | (From 13-08-08) |
| Dr. S. Azhar Hassan | Member (Science) |
| Syed Ghulam Husnain Bokhari | Director (Finance) |

**Sixteen Part-time Members:**

1. The Chairman,
   Pakistan Council for Science & Technology,
   Islamabad

2. Prof. Dr. M. D. Shami, S.I.,
   Former Chairman, PSF,
   House No.299, Street No.14, F-10/2,
   Islamabad

3. Prof. Dr. M. Akhtar, FRS,
Director General,
School of Biological Sciences,
University of the Punjab,
Quaid-i-Azam Campus,
Lahore

4. Dr. Altaf Ali Sheikh,
Adviser, Higher Education Commission,
Islamabad

5. Dr. S. M. Junaid Zaidi, S.I.,
Rector COMSATS Institute of Information
Technology,
Plot No. 30, H-8/1,
Islamabad

6. Dr. Hameed Ahmed Khan, (H.I., S.I.)
Scientist Emeritus,
PINSTECH, P.O. Nilore,
Islamabad

7. Dr. Shahzad A. Mufti,
Advisor,
Department of Bio Medical/Material Sciences,
COMSATS Institute of Information Technology,
Park Road Chak Shahzad,
Islamabad

8. Dr. M. Aslam Baig, (H.I., S.I., T.I.)
Meritorious Professor,
Department of Physics,
Quaid-e-Azam University,
Islamabad

9. Prof. Dr. Anwar ul Hassan Gilani, (S.I.)
Professor,
Department of Biological Sciences,
Agha Khan University,
Karachi

10. Prof. Dr. Waheed uz Zaman Tariq,
House No.223, Z-6,
Al-Habib Road, Near Technical School, Lal Kurti,
Rawalpindi

11. Dr. M. Anwar Waqar, (S.I., T.I.)
Dr. Panjwani Centre of Molecular Biology,
University of Karachi,
Karachi

12. Prof. Dr. M. Iqbal Choudhary, (H.I., S.I., T.I.)
Director,
HEJ Research Institute of Chemistry,
Karachi

13 Dr. Rabia Hussain, (S.I., T.I.)
Professor, Pathology & Microbiology,
Agha Khan University,
Karachi

14 Prof. Dr. M. Qasim Jan, (S.I., T.I.)
Vice Chancellor,
Quaid-e-Azam University, Islamabad

15. Dr. M. Masoom Yasinzai,
Vice Chancellor,
University of Balochistan,
Sariab Road, Quetta

16. Dr. M.A.K. Malghani,
Pro-Vice Chancellor,
Balochistan University of Information Technology &
Management Sciences,
Samungli Road,
Quetta

**The Board of Trustees of Pakistan Science Foundation was constituted vide Government of Pakistan notification No 1(2)/2003-Elect/PSF dated 24-02-2009 and 27-04-2009 respectively.**

# CONTENTS


| | | Page |
|---|---|---|
| | **EXECUTIVE SUMMARY** | 1 |
| | **INTRODUCTION** | 11 |
| | **CHAPTER-1** ACTIVITIES AND PROGRAMMES | 12 |
| | **PAKISTAN SCIENCE FOUNDATION (PSF)** | 14 |
| 1.1 | **RESEARCH SUPPORT** | 14 |
| 1.1.1 | Research Projects funded from non-development budget | 14 |
| | a. Under process Projects | |
| | b. On going Projects | |
| | c. Completed Projects | |
| 1.1.2 | Scientific publications produced through PSF Supported Projects | 53 |
| 1.1.3 | Higher Degrees Earned Through PSF Supported Projects | 54 |
| 1.1.4 | R & D Industry Programme | 56 |
| 1.1.5 | Natural Sciences Linkages Programme (NSLP) Endoment Fund | 66 |
| | a. Under process Projects | |
| | b. On going Projects | |
| 1.2 | **SCIENCE PROMOTION** | 68 |
| 1.2.1 | International Liaison | 68 |
| 1.2.2 | Activities funded from non-development budget | 68 |
| | a. Institutional Support Programme | |
| | b. PSF Awards and Fellowships Programme | |
| | c. Support to Scientific Societies/Journals | |
| | d. Publication of Scientific Journals | |
| | e. Financial Assistance for Holding of Conferences, Seminars and Workshops | |
| 1.2.3 | Activities funded from development budget | 72 |
| | a. Participation of Scientists and Technologists in International Conferences, Seminars and Workshops | |
| | b. Automation of PSF Research Support Programme and other activities | |
| 1.3 | **SCIENCE POPULARIZATION** | 75 |
| | a. Science Caravan (Mobile Science Exhibition) | |
| | b. 18th Science Essay and Poster Competition | |
| | c. Science Model Competition | |
| | d. Donation of Popular Science Magazines & Scientific Books | |
| | e. Financial Assistance to other S & T Organizations and Schools | |
| | f. World Science Day for Peace and Development | |
| | g. Visits and Trainings | |
| | h. Activities for Rehabilitation Relief of Internally Displaced Persons | |
| | i. Renovation of Science Center | |
| | j. Future Plans | |

| | | |
|---|---|---|
| 2. | **PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)** | 85 |
| 2.1 | **EVENTS ORGANISED** | 85 |
| 2.1.1 | Workshop on Sharing Biodiversity Data | 85 |
| 2.1.2 | Celebrating of World Science Day | 85 |
| 2.1.3 | Children Art Competition | 86 |
| 2.1.4 | Workshop on Environment | 86 |
| 2.2 | **VISITS TO PMNH** | 87 |
| 2.2.1 | Visit of Minister for Science and Technology | 87 |
| 2.2.2 | Visit of Secretary, Ministry of Education | 87 |
| 2.2.3 | Visit of Chinese Ambassador's wife to PMNH | 88 |
| 2.2.4 | Visit of French Attaché for Science and Technology to PMNH | 88 |
| 2.3 | Field Work | 88 |
| 2.4 | Laboratory Work | 89 |
| 2.5 | Research Publications | 90 |
| 2.6 | Technical Reports | 91 |
| 2.7 | Development Projects Completed | 91 |
| 2.8 | International Collaborative Research Project | 91 |
| 2.9 | National Collaborative Projects | 91 |
| 2.10 | National Research Projects | 92 |
| 2.11 | Design and Display | 92 |
| 2.12 | Guided Tour of PMNH Educational Activities | 92 |
| 2.13 | Services Rendered to other Organisations | 93 |
| 2.14 | Meetings/Conferences/Trainings/Workshops Attended | 93 |
| 2.15 | Lectures Delivered | 94 |
| 2.16 | Higher Studies | 94 |
| 3 | **PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)** | 95 |
| | **AIMS AND OBJECTIVES** | 95 |
| 3.1 | **ACTIVITIES AND SERVICES** | 96 |
| 3.1.1 | Document Procurement and Supply Service | 96 |
| 3.1.2 | Bibliographic Information /Literature Search | 97 |
| 3.1.3 | Abstracting and Indexing Service<br>a. Pakistan Science Abstracts (PSA)<br>b. Technology Information Service | 99 |
| 3.1.4 | PASTIC National Science Reference Library | 101 |
| 3.1.5 | Reprographic Service | 102 |
| 3.1.6 | International Liaison<br>a. SAARC Documentation Centre<br>b. UNESCO | 102 |
| 3.1.7 | Bilateral Cooperation | 104 |
| 3.1.8 | PASTIC Information Service Stalls at the Door Steps of Universities | 104 |

3.1.9 Human Resource Development 106
a. Training/Workshop organized for Information Professionals
b. Important Meetings/Workshops/Trainings Attended 107

3.1.10 New Initiatives 108
3.1.11 Miscellaneous Activities 109

**CHAPTER-2** ORGANIZATION AND ADMINISTRATION 111

**CHAPTER-3** AUDITOR'S REPORT 119

**ANNEXURES**

I. Pakistan Science Foundation Act-III, 1973 151

II. List of Projects Approved During the Year 2008-09 155

III. Details of Monitoring and Evaluation of On-Going Projects during 2008-09 159

IV. Scientific Publications Produced Through PSF Supported Completed Projects During 2008-09 167

V. Science Caravan Exhibitions Organized During 2008-09 175

VI. List of Winner Students of 18th Intra Board Science Essay Competition: Theme: "Energy Crisis & its Possible Solution" 179

VII. List of Winner Students of 18th Intra Board Science Poster Competition: Theme: "Global Warming and Climate Change" 185

VIII. 18th Inter Board Science Poster Competition: List of Consolation Prize Winners Theme: "Global Warming and Climate Change" 189

IX. Winner Students of PSF Science Model Competition, 2009 191

X. Financial Assistance to Schools and R&D Organizations 193

## ABBREVIATIONS

| | |
|---|---|
| AJK | Azad Jammu and Kashmir |
| B | Balochistan |
| C | Centre |
| F | Frontier (NWFP) |
| P | Punjab |
| S | Sindh |

**Institutions**

| | |
|---|---|
| AKU | The Aga Khan University, Karachi |
| ARIQ | Agriculture Research Institute, Quetta |
| P-AU | Agricultural University, Faisalabad |
| BU | Balochistan University, Quetta |
| BZU | Bahauddin Zakaria University, Multan |
| CEMB | Centre of Excellence in Molecular Biology, Lahore |
| CEME | College of Electrical and Mechanical Engineering, Rawalpindi |
| CEWRE | Centre of Excellence in Water Resources Engineering, Lahore |
| GCU | Government College University, Lahore |
| GU | Gomal University, D.I. Khan |
| KU | Karachi University, Karachi |
| NARC | National Agricultural Research Centre, Islamabad |
| NIBGE | National Institute for Biotechnology and Genetic Engineering, Faisalabad |
| NSFC | National Science Foundation of China |
| PMNH | Pakistan Museum of Natural History, Islamabad |
| PINSTECH | Pakistan Institute of Nuclear Science and Technology, Islamabad |
| F-PU | Peshawar University, Peshawar |
| P-PU | Punjab University, Lahore |
| QAU | Quaid-i-Azam University, Islamabad |
| SALU | Shah Abdul Latif University, Khairpur, Sindh |
| SIUT | Sindh Institute of Urology & Transplantation, Karachi |
| SU | Sindh University, Jamshoro |
| PCCC | Pakistan Central Cotton Committee, Sakrand |
| UAA/UAAR | University of Arid Agriculture, Rawalpindi |
| COMSATS | Commission on Science and Technology for Sustainable Development of South Asian |
| COMSTECH | Committee on Scientific and Technological Cooperation |

**Disciplines**

| | |
|---|---|
| Agr | Agricultural Sciences |
| Bio | Biological Sciences |
| Biotech | Biotechnology |
| Chem | Chemical Sciences |
| Comp | Computer Sciences |
| Earth | Earth Sciences |
| Eng | Engineering Sciences |
| Envr | Environmental Sciences |
| Med | Medical Sciences |
| Phys | Physical Sciences |

**Others**

| | |
|---|---|
| CDWP | Central Development Working Party |
| SSGC | Sui Southern Gas Company |
| NSLP | Natural Sciences Linkages Programme |
| P.I. | Principal Investigator |
| NSTC | National Science and Technology Commission |
| BISE | Board of Intermediate and Secondary Education |
| PSDP | Public Sector Development Programme |
| DDWP | Departmental Development Working Party |
| WWF | World Wild Life Fund |

# EXECUTIVE SUMMARY

## PAKISTAN SCIENCE FOUNDATION (PSF)

Pakistan Science Foundation is the apex body for promotion and funding of scientific and technological research and other related activities in the country. The tasks undertaken by the Foundation for the performance of its statutory functions are divided into following three broad categories.

i. **Science Promotion**

To promote basic and applied research in universities and research institutes on scientific challenges & activities related to socio-economic needs/development of the country.

ii. **Science Popularization**

To increase public awareness about science through science popularization activities by establishing museums, clubs, herbaria and planetaria etc.

iii. **Science Centres**

To establish centers for comprehensive scientific and technological information systems and services

Some of the activities pertaining to these objectives are undertaken by Pakistan Museum of Natural History (PMNH) and Pakistan Scientific and Technological Information Centre (PASTIC), the two subsidiary organizations of PSF, while others are performed by the PSF Science Wing and are reflected as under:

## RESEARCH SUPPORT:

Research support is the principal programme of the Foundation for the promotion of basic and applied research relevant to socio-economic development of the country. During 2008-2009, a total of 209 projects in the fields of Agriculture, Biology, Biotechnology, Chemistry, Computer Sciences, Earth Sciences, Engineering, Medical Sciences and Physics remained under consideration. Among these, 97 were under process, of which 16 projects costing Rs.25.438 million were sanctioned and Rs.7.714 million were released on account of first installments of these approved projects. Besides, one hundred and twelve (112) research

projects remained on-going and an amount of Rs.10.718 million was released on account of due installments of these projects.

Final reports of 17 research projects were adopted by the respective Technical Committees. Based upon the final reports, the accounts of these projects were settled and their files were closed. One of the main achievement and usefulness of any research is the publication of its results in scientific journals. Based upon the results of completed projects, 31 research papers were published in national/international journals and one (01) patent was obtained. In addition, 12 Ph.D and 29 M.Phil/M.Sc (Hons) degrees were awarded to the Research Associates employed in these projects.

Focusing on the collaborative research and strong industrial linkages, R&D–Industry Programme (previously called Industrial Linkages Programme) is bringing together researchers, end-users and the funding institution on one platform to create an environment of a unified approach to identify and solve industrial problems through applied research and technology transfer mechanism. Under this programme, an amount of Rs.450,000/- was released to an on-going project entitled "Design and manufacturing of light weight composite reinforced CNG cylinder". Efforts remained underway to identify and initiate more projects of industrial nature for socio-economic development of the country.

## Natural Sciences Linkages Programme (NSLP) Endowment Fund

The Foundation maintains an endowment fund to boost the agriculture sector in the country named as Natural Sciences Linkages Programme (NSLP). Under this programme, 47 projects remained under active consideration. Among these, 39 projects were under process, of which, six(6) costing Rs.16.015 million were sanctioned, whereas, 33 research projects are still in the pipeline. Eight (08) research projects remained on-going and an amount of Rs.6.656 million was released on account of due installments of 08 on-going and 06 newly approved projects.

## SCIENCE PROMOTION ACTIVITIES:

### 1. Institutional Support:

One of the functions of the Foundation is to support the R&D Organizations/ Universities throughout the country to strengthen their laboratories for quality research. An amount of Rs.0.699 million was released to 02 Universities/R&D Organizations for enhancement of their research capabilities by purchasing equipments and chemicals etc.

### 2. Financial Assistance for holding Science Conferences, Seminars and Workshops:

Another function of the Foundation is to provide funding for holding science conferences/seminars/symposia/workshops etc. During the year 2008-09, Rs.0.630 million was released to thirteen (13) institutions for organizing conferences, seminars and workshops on important scientific issues.

### 3. Publication of Scientific Journals:

An amount of Rs.0.170 million was paid to various organizations for publication of four (4) scientific journals.

### 4. Awards and Fellowships:

The Foundation provides a limited number of research fellowships, purely on merit, to those M.Phil and Ph.D scholars, who do not have any other source of income. During the year, 5 PhD/M.Phil students were awarded fellowships and an amount of Rs.0.306 million was paid to them for carrying out their PhD/M.Phil research.

### 5. Annual Grant-in-Aid to Scientific Societies:

The Foundation also provides funds to Scientific Societies for holding regular conferences, meetings and publication of scientific journals in various disciplines. An amount of Rs.2.476 million was granted to sixteen (16) Scientific Societies for their activities, whereas Rs.0.185 million was released in favour of four (04) Editors for publication of their scientific journals.

## INTERNATIONAL LIAISON:

Twenty eight (28) S&T proposals of PSF/PMNH/PASTIC were forwarded to MoST for consideration/approval under various S&T protocols signed by the Government of Pakistan with various countries.

## PLANNING AND DEVELOPMENT:

An amount of Rs.0.643 million was received under PSDP 2008-09 on account of project entitled "Participation of Scientists and Technologists in International Science Conferences, Seminars, Workshops and Trainings Abroad (Phase II)" and utilized for payment of staff salaries and other miscellaneous expenses.

Under PSDP 2008-09, an amount of Rs.4.081 million was received on account of the development project entitled "Automation of PSF Research Support Programme and other Activities". During the report period, Server Room for management of Local Area Network (LAN), Wide Area Network (WAN) and PSF Website were established. Furthermore, the contract for development of application software for PSF research support programme and other activities was awarded to the lowest qualified bidder, namely Sidat Hyder Morshad Ltd. The funds obtained were spent on the development of application software, payment of salaries to the project staff and purchase of certain miscellaneous items.

## SCIENCE POPULARIZATION:

Popularization of Science by increasing its awareness in the society, and development of scientific culture in the country are some of the major functions entrusted to Pakistan Science Foundation. The summary of the activities carried out for the purpose during the fiscal year 2008-09 is given below:

**Science Caravan** is a Mobile Science Exhibition that has been designed to increase public awareness about science and to motivate the younger generation towards study of science. At present, nine Science Caravan Units are in operation, two for each of the four provinces and one is stationed at Islamabad. Panel exhibitions, working models, film/documentary and planetarium shows are major parts of each Caravan. The PSF Science Caravans organized

Caravan Exhibitions for 461 days and more than 145,000 students of 654 schools visited these exhibitions.

The Foundation in collaboration with BISEs organized **18th Intra Board and Inter Board Science Essay and Poster Contests**. Thousands of students from all over the country participated in these competitions. The topics for essay and poster competitions were "Energy Crisis and its Possible Solutions" and "Global Warming and Climate Change" respectively. Cash prizes were awarded to seventy one (71) winner students of Essay Competition and fifty one (51) students of Poster Competition. An amount of Rs.522,000/- was disbursed among the winner students as prize money.

This year, the Foundation has initiated a new program entitled **"Science Model Competition"** for students through the BISEs. Four Boards, namely BISE DG Khan, BISE Sukkur, BISE Abbottabad and BISE Mirpur (AJK) organized the Model Competition. Each Board was provided a grant of Rs.25,000/- for organizing the competition. In total, a sum of Rs.200,000/- was disbursed as prize money for the winner students and grants to the Boards.

Donation of **Popular Science Magazines and Scientific Books** is one of the regular and important activities of Science Popularization Section. Eighteen hundred (18,000) copies of Popular Science Magazine "Monthly Global Science" were acquired and donated to 1500 schools during the report period. In addition, about 13,000 copies of scientific brochures were also distributed among the students. Fifteen copies of the Scientific Journal "The Fountain" published by The Light Publishing Turkey were purchased and provided to Caravan offices, PASTIC and PMNH. One hundred (100) copies of the book entitled *"Development of S&T in Pakistan and Muslim Ummah in the Light of its Cultural History and Temperament: Vol II Historical Analysis of S&T Decline and Interaction with Islamic Thought 2008"* by Dr. M.M. Qureshi, and twenty (20) copies of the book "Science, Education, and Development: Life and Work of M. Raziuddin Siddiqi" by Dr. Anwar Dill were purchased for distribution among the universities of the country.

The Foundation provides **Financial Assistance** to High Schools working in the Government Sector, especially in rural areas for **strengthening of their Science Laboratories**.

Furthermore, in addition to its own Science Popularization Activities, the Foundation also helps other S&T organizations in organizing such activities. An amount of Rs.637,000/- was sanctioned to nineteen (14) schools and S&T organizations for the purpose.

A sum of Rs.200,000/- was provided to SOFTECH Society, FAST National University, Lahore for organizing **Software Competition "SOFTECH-2009"** (4-5 April 2009). Mr. Kashif Murtaza, Secretary, MoST was the Chief Guest on the closing ceremony and awarded the prizes, certificates and shields to the winners.

**World Science Day for Peace and Development (WSDPD)** is another important event being celebrated regularly by the Foundation on 10th of November each year. This year, the major event was "Convention on Science for Peace and Development", organized at Margala Hotel, Islamabad. Dr. Ishfaq Ahmed, N.I., H.I., S.I. presided and Mr. Saifullah Khan Sherwanee, Secretary, MoST graced the occasion as the Chief Guest. In addition, PMNH, PASTIC, Science Centre Faisalabad and all Caravan Units celebrated the day by organizing a number of programs.

**Ms. Asiya Nasir, Federal Parliamentary Secretary** for Science & Technology alongwith other delegates visited Science Caravan Office and PASTIC Sub Centre, Quetta on 17th March 2009. The Acting Assistant Director/Incharge and staff welcomed and briefed the delegates about major activities of Science Caravans and PASTIC Sub Centre. She was also briefed about the future plans of the Foundation regarding strengthening of Science Caravan and PASTIC Sub Centre.

**Two days Training Program** for the Officers and Staff of Science Caravans and PASTIC Sub-Centres was organized on 8-9 June, 2009 at the Foundation. The Caravan Incharges (Assistant Directors & Deputy Directors) and Science Assistants and Incharges of all PASTIC Sub-Centres and other officers/staff from PASTIC participated in the Training Workshop.

# PAKISTAN MUSEUM OF NATURAL HISTORY (PMNH)

The main objectives of PMNH include research and public education on the natural resources of the country. This year, PMNH organized 2 workshops, one on "Sharing Biodiversity Data on Internet" and the second on "Environment Protection and Conservation of Natural Resources". An exhibition of natural history photographs was held in connection with the celebrations of World Science Day, while a Children Art Competition on Environment was organized in connection with celebrations of National Year of Environment 2009. The Federal Minister for Science and Technology, Mr. Muhammad Azam Khan Swati visited PMNH on 24th February, 2009. Mr. Abdul Rauf Chaudhry, Federal Secretary, Ministry of Education, visited PMNH on March 21, 2009. Mrs Lou Zhaohui, the wife of Chinese Ambassador and a group of Chinese students and officials of the Embassy visited the PMNH on November 1, 2008. PMNH scientists conducted field studies at various localities of Sindh, Punjab, NWFP, AJK, and the Northern areas of Pakistan. Some 75,000 specimens of animals, plants, rocks, minerals and fossils were collected along with field data and photographs. These specimens were preserved, identified, catalogued and stored at PMNH reference depository. PMNH research resulted in the publication of 12 research articles in national and international journals. One international collaborative research project was completed and another international collaborative research project with Switzerland is continued. Work on 4 national collaborative research projects and 4 projects funded by the Foundation were carried out. PMNH development project entitled "Completion of Block-II and Strengthening of Research and Display Activities of PMNH" was completed, which also included 4 outdoor animated exhibits. The number of visitors to PMNH remained 24,569, which included 14,999 students and teachers, 9,464 general visitors and 106 foreigners.

# PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

Pakistan Scientific and Technological Information Centre (PASTIC) is the premier organization in the field of information dissemination that serves as a gateway for access to and delivery of S&T information catering to the needs of the researchers. It is one of the few public sector organizations, which has acquired ISO: 9001: 2000 Certification.

PASTIC National Centre is housed in its own building at Quaid-e-Azam University Campus, Islamabad with comprehensive collection of publications in various fields of Science and Technology. PASTIC has six Sub-Centres working at Karachi, Lahore, Peshawar, Quetta, Faisalabad and Muzaffarabad.

The main objective of PASTIC is to acquire, process and disseminate information in all disciplines of Science and Technology. To meet this objective, PASTIC develops inter-library cooperation for sharing resources, establishes and maintains links with international/regional information networks/agencies. PASTIC provides training to information professionals in modern information handling and management techniques. Collaborations with different organizations and agencies enhance the scope of PASTIC information services that are offered to clients and help PASTIC in responding to the diverse needs of a broad community of users.

PASTIC increased its number of users three times during last 1-2 years through promotional efforts such as PASTIC Stalls at universities and conferences, PASTIC Boxes in some libraries, etc.

PASTIC Stalls were organized inside various universities so that S&T information can be brought to the doorstep of the researchers. This effort proved very successful as the number of users increased 3 times and a large number of new research scholars and faculty members came to know about PASTIC Information Services. A total of 38 stalls were arranged at various departments of 14 universities in several major cities, 8 R&D organizations/institutes and also at some conferences/seminars. In addition, Selective Dissemination of Information (SDI) was initiated for research projects funded by PSF and Government sources.

New data were collected and different databases are being developed such as Database of the Libraries of S&T and R&D Organizations of Pakistan; Database of S&T/R&D Organizations; Database of Databases available in Pakistan; Database on Completed and On-going S&T Projects in Pakistan (2000 onward); Database of the S&T Seminars/Conferences organized in Pakistan (2000 onward). Efforts are also being made to collect proceedings and reports of these seminars/workshops.

During 2008-09, a total 1037 articles were supplied to 781 researchers under the Document Supply Service, whereas 828,717 references/abstracts from International Bibliographic Databases, both online and offline in all major disciplines of Science and Technology were supplied to 3096 researchers/users on their request under the Bibliographic Information Service.

PASTIC publishes an abstracting journal entitled "Pakistan Science Abstracts" (PSA) in ten different scientific disciplines as secondary source of information on regular basis. During the period, Vol. 45 and 46 of Pakistan Science Abstracts were published in all ten disciplines and were distributed among S&T / R&D organizations and academic institutions as a part of information dissemination activities.

Technology Information Section of PASTIC initiated the development of Technology Database, which is based on information pertaining to trade and technology offers and business opportunities from some developing countries. Technology Information website has also been developed. A bimonthly news e-bulletin entitled "Technology Roundup" was launched during the period under review. Besides, seminars on S&T information services were organized for industry. Guidance on acquiring patents for inventions was provided to scientists and R&D workers.

It is planned to make PASTIC the National Resource Centre for scientific and technological published material. PASTIC houses the science reference library, which has a collection of more than 8,500 books, over 1550 titles of journals (278,002 issues) and 8,904 miscellaneous documents and reports. During 2008-2009, about 690 users visited PASTIC Library for reference purpose, reading and photocopying services and 306 articles were supplied to the researchers. The library received 631 issues of national and international journals in exchange of Pakistan Science Abstracts, under international cooperation activities and on gratis basis, which has contributed to a considerable extent for strengthening of information resources of PASTIC. In addition, 138 books, 106 reports, miscellaneous documents, etc., were acquired, which were processed and shelved for use. Under other library activities, bulletin of fresh arrivals was published regularly for current awareness purpose.

Under Reprographic Service of PASTIC, about 97 printing jobs of 13 R&D organizations were performed.

PASTIC also acts as the National Focal Point for International/Regional Information Networks, like SAARC Documentation Center, WHO/CEHANET and is the national distributor of UNESCO developed library management software "WINISIS". During the year 2008-2009, information/data received from these organizations was disseminated among the relevant institutions and professionals. PASTIC facilitated other institutions of the country to avail SAARC Documentation Centre training opportunities.

PASTIC organized seven different workshops and seminars during 2008-09 on different themes pertaining to S&T information handling and dissemination activities such as Library Automation "WINISIS" at Bahawalpur & Peshawar, "The Role of S&T Information for the Promotion of Industrial Activities" at Peshawar, " S&T Information needs of the Food Industry" at Karachi, "Data Warehousing and Data Mining at Islamabad, "Value Addition in the Industrial Activity through S&T Information and R&D Support Services of PASTIC/PSF at Rawalpindi, "Technology Tools for Library Operations, Information Storage and Retrieval"at Jamshoro.

# INTRODUCTION

Pakistan Science Foundation was established on June 30, 1973 under the Pakistan Science Foundation Act No. III of National Assembly (Annexure I) as an autonomous body to promote and finance scientific and technological activities having a bearing on the socio-economic needs of the country. Under the Act, the Foundation has been entrusted to carry out the following functions:

i) Establishment of comprehensive scientific and technological information and dissemination centers.

ii) Promotion of basic and fundamental research in universities and other institutions on scientific problems relevant to the socio-economic development of the country.

iii) Utilization of the results of scientific and technological research including pilot plant studies to prove the technical and economic feasibility of processes found to be promising on a laboratory scale.

iv) Establishment of science centers, clubs, museums, herbaria and planetaria.

v) Promotion of scientific societies, associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular.

vi) Organization of periodical science conferences, symposia and seminars.

vii) Exchange of visits of scientists and technologists with other countries.

viii) Grant of awards, prizes and fellowships to individuals engaged in developing processes, products and inventions of consequence to the economy of the country.

ix) Special scientific surveys not undertaken by any other organization and collection of scientific statistics related to the scientific efforts of the country.

The Foundation shall also:

i) Review the progress of scientific research sponsored by it and evaluate the results of such research.

ii) Maintain a National Register of highly qualified and talented scientists/engineers and doctors both in and outside Pakistan, and to assist them in collaboration with concerned agencies to seek appropriate employment.

iii) Establish liaison with similar bodies in other countries.

The activities performed under the above mentioned statutory functions are given in the chapters that follow.

# CHAPTER – 1

## ACTIVITIES & PROGRAMMES

The activities and programmes undertaken by the Foundation for the performance of its statutory functions can be broadly divided into the following four categories:

i. Establishment of Comprehensive Scientific and Technological Information and Dissemination Centers.

ii. Promotion and Financing of Scientific Research in the Country and the Utilization of the Research Results.

iii. Promotion and Popularization of Science in Society.

iv. International Liaison.

The first activity is carried out through **Pakistan Scientific and Technological Information Centre (PASTIC),** a subsidiary organization of PSF. The other functions i.e., research support and science popularization etc., are performed by the Science Wing of the Foundation. Functions of the Science Wing of PSF are further subdivided as under.

**Science Promotion Section** is performing the following activities:

1. Research Support
    a) Grants for Research Projects
    b) Institutional Support
2. Research Evaluation
3. Promotion/funding of Scientific Societies/Learned Bodies
4. Funding of Conferences, Symposia, Seminars & Workshops.
5. Travel Grants
6. International Liaison
7. Awards and Fellowships
8. Surveys and Statistics
9. Scientists Pool
10. Inventions and Innovations
11. Planning and Development Program

**Science Popularization Section** carries out science popularization activities including Science Caravans, Science Clubs, Science Fairs and holding of Popular Science Lectures, Workshops, Conferences and Symposia.

In addition to PASTIC, the other subsidiary organization of PSF is the **Pakistan Museum of Natural History (PMNH)**, established in 1979 to serve the national needs in the vitally important areas of research, conservation and education involving Pakistan's heritage of natural resources. The Museum is a National Repository for permanent storage of plants, animals, rocks, minerals and fossils of the country.

The progress of the work carried out by the Science Wing of the Foundation, PMNH and PASTIC during the year 2008-2009 is summarized in the following pages.

# 1. PAKISTAN SCIENCE FOUNDATION (PSF)

## 1.1 RESEARCH SUPPORT

### 1.1.1 Research Projects Funded from Non Development Budget

Research Support (Science Promotion) is the principal programme of Pakistan Science Foundation for the promotion of basic and applied research, having relevance to the socio-economic development of the country. Therefore, projects of both basic and applied nature are supported by the Foundation. The criteria for funding of research projects by the Foundation include the competence of the scientific personnel to carry out research, institutional capabilities, i.e., availability of basic equipment and laboratory facilities, scientific and technical merit of the proposed research projects and likelihood of completion of the proposed research within the stipulated time. Each proposal, after getting reviewed from subject expert in the particular field, is placed before the relevant Technical Committee for technical and fiscal evaluation and recommendations for the provision of funds under various heads of expenditure proposed by the researchers. The proposal, if recommended by the Technical Committee, is then submitted to PSF Executive Committee for final approval.

**a. Under process Projects:**

During the report period, 209 research proposals remained under active consideration of the Foundation. Out of these, 97 projects were under-process and 16 of these were approved by the Foundation at a total cost of Rs.25.438 million (Annexure-II), whereas Rs.7.714 million were released on account of first installments of these approved projects.

**b. On-going Projects:**

During the period, there were one hundred and twelve (112) projects, which are on-going research projects, whereas 80 progress reports (semi-annual, 1st and 2nd annual & final) of these projects were received. Semi-annual reports were scrutinized by PSF staff, whereas the annual and final reports, after initial scrutiny, were sent for evaluation to the subject experts to assess the interim progress of the projects. Due installments of on-going projects are released

only if the interim progress of the projects is satisfactory. An amount of Rs.10.718 million was released on account of due installments and evaluation fee of ongoing projects. A list of the semi-annual and annual reports is given in **Annexure-III**.

### c. Completed Projects:

Seventeen (17) research projects funded under regular non development budget were completed during the year 2008-09. The subject experts evaluated the final technical reports of these projects, which were subsequently placed before the respective PSF Technical Committees for consideration. After adoption of these reports by the Committees, the accounts of these projects were settled and files were closed. A list of the completed projects followed the summary of their scientific output benefits is given below:

### i) List of Completed projects:

| S. No. | Projects No. | Project Title |
|---|---|---|
| 1. | F-AU/Agr (115) | Growth pattern and nutritional status of infants and toddlers in NWFP, Pakistan |
| 2. | P-AU/Agr (242) | Utilization of the genetic potential existing in *Sorgum bicolor* moench for the development of genotype tolerant to salinity |
| 3. | AJK-UCR/Agr (275) | Studies on the establishment and improvement of clovers (*Trifolium spp.*) for nitrogen availability and soil management under agro-climatic conditions of Azad Kashmir |
| 4. | P-AU/Agr (283) | Epidemiological and pathological study on tuberculosis in food animals and its association with human infection |
| 5. | P-AU/Bio (246) | Development of subunit recombinant vaccine (s) and sensitive diagnostic test for controlling infectious bursal disease of poultry. |
| 6. | S-KU/Bio (344) | Seed dormancy mechanisms in coastal halophytes of Karachi |
| 7. | P-AU/Bio (347) | Development and molecular characterization of genotype vaccine (local isolates) against avian coccidiosis. |

| | | |
|---|---|---|
| 8. | Biotech/P-AU/Med (24/1) | Technologies development for the production of gonadotropin from animal sources |
| 9. | Biotech/P-NIAB/Agr (44) | Characterization of Pakistani wheat varieties by microsatellite markers |
| 10. | Biotech/P-NIBGE/Envr (48) | Cloning of raw starch digesting alpha amylase from bacillus sp. and its expression in E. coli |
| 11. | Biotech/P-UAAR (220) | Cloning and sequencing of major DNA components of banana bunchy top virus from Pakistan |
| 12. | C-QU/Chem (203) | Synthesis of chalcones, imminochalcones and thiochalcones having potential industrial applications |
| 13. | C-QU/Chem (376) | Synthesis and biological evaluation of β-hexapeptide analog of neurotensin nt (8-13). |
| 14. | C-PINSTECH/Engg (39) | Study of bonding between zircaloy and stainless steel |
| 15. | PSF/ILG/029/03 | Pharmacognosy of medicinal plants of Pakistan: Determination of active constituents |
| 16. | US-NSF/C-QU/Phys (18) | Magnetic and structural studies of nanoparticles. |
| 17. | C-QU/Phys (127) | Laser induced breakdown spectroscopy |

**ii) Summaries of Completed Projects:**

| | |
|---|---|
| **Project No.** | **F-AU/Agr (115)** |
| Project Title: | Growth Pattern and Nutritional Status of Infants and Toddlers in North West Frontier Province, Pakistan |
| Duration: | 3-Years |
| Date of Initiation: | 01.08.1992 |
| Date of Completion: | 31.07.1995 |
| Final Report Received: | 15.12.2008 |
| Location of Scheme: | NWFP Agricultural University, Peshawar |
| Principal Investigator: | Prof. Dr. Parvez Iqbal Paracha |
| Total Expenditure: | Rs. 194,400/- |

**Main Objectives:**

- To collect the baseline data on nutritional status of infants and preschool-age children in North West Frontier Province, Pakistan.
- To determine the age of infants at which growth faltering ensues.
- To develop growth standards and charts of infants and preschool-age children for North West Frontier Province, Pakistan.
- To assess the dietary adequacy of infants and toddlers.
- To provide the anthropometric data to Government and other donor agencies for planning and implementing supplementary feeding programmes for infants and pre-school-age children.
- To control and reduce the infant and preschool-age mortality and morbidity by recommending various strategies after evaluating the data.

**Summary of work done:**

A longitudinal growth monitoring study was carried out on newly born babies in Peshawar and Nowshera districts of the North West Frontier Province (NWFP), which was followed over a period of three years. The main objectives of the study were to assess the nutritional status and growth pattern of infants and children over different time intervals along with feeding and weaning practices, demographic and socio-economic characteristics of families and to document prevalence of malnutrition among infants and toddlers. Newly born babies at Maternity Hospital, Peshawar and Maternity and Child Health Centre, Aza Khel Bala, Nowshera were registered. However, a follow-up study could not be undertaken in Peshawar due to dispersed population and the mothers did not feel convenient to bring their infants to the centers for anthropometry. A total number of one hundred and ninety newly born babies were enrolled and the weight, height and head circumference of the babies were measured within twelve hours of the delivery. These were followed for weight, height and head circumference measurements at an interval of every three months during first and second year and at six month intervals during the third and last year. Demographic and socio-economic questionnaires were also filled out by the mothers and care givers.

Anthropometric results revealed that 16% of the baby boys were born with low birth weight in comparison to 10% of the baby girls born with a low birth weight. The mean birth weight and length of the babies were found to be lower than those of the reference newly born babies. Mean weight-for-age Z-score (WAZ) and height-for age Z-score (HAZ) of the baby boys were lower than those of the baby girls while the mean weight-for-height Z-score (WHZ) of the baby boys was greater than that of the baby girls. 9.38%, 4.17% and 13.58% of the baby boys were characterized as underweight, stunted and wasted, respectively in comparison to 1.06%, 2.13% and 8.33% of the corresponding indicators for the baby girls. With the progression of infant's age, the Z-score of the anthropometric indicators dropped and prevalence of malnutrition increased. The growth indicators such as Z-score and percentile curves based on weight and height of infants and children over different time periods revealed that the difference in Z-scores and the percentile curves between the studied and reference infants during the first six months were low and it became more pronounced with the progression of child's age. Similarly, the prevalence of malnutrition based on the cut-off value of -2 Z-score showed that at birth malnutrition was prevalent between 5.26% (WAZ<-2) and 11.11% (WHZ<-2) reached between 8.06% (WHZ<-2) at the end of first year and from 14.08% (WHZ<-2) to 46.07% by the end of third year. The growth curves of infants and children constructed from the longitudinal weight and height data revealed that infants grew well during first six months of age but growth faltering in both boys and girls became more pronounced once the infant passed the age of six months and it continued to increase with increasing age.

Results regarding feeding and weaning practices of mothers show that 57.8% of the mothers start feeding their babies on the first day of their birth, 32% on the second day and 10% on the third day. However, a very few mothers (18.04% start feeding their babies with breast milk while the rest of the mothers gave pre-lacteal food to the babies.) Guttac was found to be more preferred pre-lacteal food among the mothers. During the first three moths, exclusive breast feeding was the most common mode of feeding the babies: however, exclusive breast feeding was replaced gradually by partial breast feeding as the infant grow older. Exclusive breast feeding followed by 81.6% of the mothers at birth dropped to 30.9% by the end of first year, it further decreased to 6.4% and 1.7% by the end of 2$^{nd}$ and 3$^{rd}$ years, respectively. The results also revealed that majority (77.8% ) of the mothers introduced supplementary food to

their babies at the age between four and six month while a small percentage (22.2%) of the mothers gave solid food to their babies at the age between seven and nine months. As far as quality of solid food given to the babies is concerned, it was observed that only 7.5% of the mothers gave special (commercial solid food and home made) food to their babies while the rest (92.5%) of the mothers did not care about the quality of food rather they gave food which was available at the time of baby's demand.

Demographic and socio-economic characteristics of the families revealed that 70.5% of the families had extended or joint family system and 29.5% of the families were living in a nuclear family system (a married pair and their dependent children). Family size ranged from five to thirteen people with mean of about seven people per family. Number of children per family ranged between three to seven with mean of about five children per family. Education level among the studied families shows that 41.1% of the fathers were illiterate, 16.3% received education up to primary level, 33.7% up to lower secondary level and 8.5% had higher secondary education. Education amongst the mothers was low, 90.0% of the mothers were illiterate 6.8% had education up to primary level and only 3.2% of the mothers had education up to secondary level. Father's occupation ranged from laborers to shopkeeper and a small proportion of the people went abroad as laborers. Average income of the family was found to be about Rs. 4000/- per month.

Possession of relatively expensive household goods which indirectly represent the economic status of the families revealed that about 50% of the families had either one or more major electric appliances at home. Possession of transport by the families to commute revealed that 54.8% of the families had no transport, 38.4% of the families had bicycles, 4.2% had motorcycle and 2.6% had cars for their use. By and large (91.6%) houses were made of mud while 8.4% of the houses were made of brick and concrete. It was also found that 53.2% of the marriages took place outside their families while 46.8% of the marriages were arranged within their families i.e., first second cousins.

The study provides baseline data on anthropometric measurements, prevalence of low birth weight babies, percentage of malnourished infants and children, feeding and weaning practices and demographic and socio-economic characteristics of the families. The information is important for planners and policy makers involved in child health, nutrition,

education and public hygiene and sanitation to formulate appropriate strategies to combat malnutrition among infants and children. The study also highlights the poor nutritional status and high prevalence of malnutrition among children of below three years and calls for the attention of policy makers for an increased allocation of funds for public sectors development programs in order to launch nutrition interventions i.e., child's feeding program, nutrition education of mothers and care giver, nutrition counseling and establishment and strengthening of growth monitoring, nutrition surveillance and nutrition screening.

The existing medical and para-medical staff especially Lady Health Workers (LHWs), Lady Health Visitors (LHVs) and Nurses need to be trained in nutritional anthropometry techniques, child's feeding and in nutritional counseling techniques to educate care givers and disseminate nutritional knowledge in communities.

---

| | |
|---|---|
| **Project No.** | **P-AU/Agr (242)** |
| Project Title: | Utilization of the genetic potential existing in *Sorgum bicolor* moench for the development of genotype tolerant to salinity |
| Duration: | 3-Years |
| Date of Initiation: | 01.07.02 |
| Date of Completion: | 30.06.05 |
| Final Report Received: | 15.02.08 |
| Location of Scheme: | University of Agriculture, Faisalabad |
| Principal Investigator: | Dr. Faqir Muhammad Azhar |
| Total Expenditure: | Rs. 449,667/- |

**Main Objectives:**

- To develop plant material of *Sorghum bicolor L.* capable of growing under saline conditions of Pakistan to utilize huge waste area of the country for cultivation, and harvesting handful yields of food grains.

**Summary of work done:**

Development of soil salinity is in frequent occurrence in arid and semi-arid regions of the world, but the soils of Pakistan provide the best illustration of the advance of salinization. The combination of different kinds of salts in the root zone develops highly stressful conditions for the growing plant, and hence has adverse effect on the productivity of agricultural crops. Many soil amendments were recommended to leach the salts down in the water table. Another approach of tackling the problem is through bringing genetic modification in crop plants endemic to the areas affected by salinity, and sorghum is one of them.

During study, 80 different accessions/lines were assessed for their responses to NaCl salinity. Two experiments were conducted for this purpose. In solution culture method, 50 lines were grown under different levels of NaCl in the nutrient medium and were allowed to grow for 14 days. Genotypic responses to salinity were compared using shoot length, root length, fresh seedling weight and dry seedling weight. In the second experiment, 30 accessions were grown in sand for 20 days under different NaCl salt stress, and seedling characters were measured. In addition, uptake of $Na^+$ and $K^+$ was determined to study salt tolerance of 30 accessions. The existence of variation in 80 accessions was investigated on the basis of actual performance of seedlings in control and salt stress, and also on the basis of reduction in seedling characters measured in salts characteristics relative to those in control. The data helped for the identification of salt tolerance and salt susceptible accessions. As roots are the plant organ which remain in contact with salt, and therefore are affected more than other organs, and therefore root length data of 30 seedlings of 30 accessions were analyzed to study whether variation in root length is transferable or not. The results of the analysis of root length data revealed that variation in accessions responses is transferable to the next generations, suggesting that further improvement in salinity tolerance in sorghum may be made through selection and breeding.

Based upon the similarities and differences in genotypic responses, four accessions namely Double TX, INRA-133, INRA-353 and GIZA-114 were selected from the germplasm as the parent material to exploit variation in salinity tolerance. The four parents were grown in the field in July, 2002 for hybridization, and five crosses were attempted to develop hybrid seed.

During the year 2003, second generation of hybrid seed was grown in earthen pots in glasshouse to develop sufficient quantity of seeds for screening under salinity. Screening of breeding material was done at the campus in NaCl salinized beds, and also under natural conditions on the salinity area of Biosaline Research Station, Pacca Anna (Gojra). During growth and development of plants, these were irrigated with under ground brackish water. At maturity few seeds from tolerant plant were collected from both the locations. During the 3rd year of the project, the seed were grown on salinized beds at the campus, and on the saline area of Regional Agricultural Research Institute, Bahawalpur, for further identification of plants showing enhanced NaCl tolerance. The process of further screening will continue using the resources of the department. The sorghum material developed through breeding may hold a good promise for the farmers in the areas affected by salinity in Pakistan.

---

| | |
|---|---|
| **Project No.** | **AJK-UCR/Agr (275)** |
| Project Title: | Studies on the Establishment and Improvement of Clovers (*Trifolium spp.*) for Nitrogen Availability and Soil Management under Agro-climatic Conditions of Azad Kashmir |
| Duration: | 3-Years |
| Date of Initiation: | 01.10.2001 |
| Date of Completion: | 31.03.2006 (extension) |
| Final Report Received: | 25.02.2008 |
| Location of Scheme: | University of Azad Jammu & Kashmir, Muzaffarabad, Azad Kashmir |
| Principal Investigator: | Prof. Dr. M. Kaleem Abbasi |
| Total Expenditure: | Rs. 683,247/- |

**Main Objectives:**

- To collect and identify *Trifolium spp.* growing in hilly areas of Poonch Division (Azad Kashmir).
- To attempt the isolation of an effective *Rhizobium* strain to be used as inoculation for the establishment and improvement of local clovers used for green fodder and nitrogen availability.

- To evaluate the short and long term effects of clovers on soil-plants characteristics especially their residual effect on the growth and yield of the following wheat and/or maize crop.

**Summary of work done:**

A preliminary one-year field study with a local ecotype of white clover was performed to examine the possibilities of the growth and establishment of white clover under Rawalakot conditions. Seeds and white clover plants were collected from the hilly and moist places nearby Rawalakot and grown in the Research Farm of the Faculty of Agriculture, Rawalakot. Vegetative growth herbage yield, nitrogen (N) uptake and fixation was studied. Additionally, rhizobia infestation was studied by isolating rhizobia in culture media. The annual herbage yield (fresh fodder) of clover and clover+ grass mixture harvested twice during the season was 7-15 t ha -1 while dry matter yield was 3-6 ha-1 protein content of white clover was 16% as compared to 5% in the indigenous grass species demonstrating the superior feed value of white clover. The development of rhizobium colonies in the culture media and the presence of about 20 nodules per plant indicated the purity of rhizobium and its N2 fixing potential. The N content of clover and clover + grass mixture was 2-2.5% compared to 0.87% by grass alone showing that clover was able to fix an average of 77-kg N ha-1. It was found that white clover can easily be grown and established in hilly areas of Rawalakot and would sustain high level of pasture production and could provide inputs of N through N2 fixation which, in turn, will increase the productivity potential of soils in mountain eco-regions of Azad Jammu and Kashmir. However, during this preliminary study the persistence of local completely failed during extreme weather.

To overcome this problem, three exotic ecotypes of white clover from Australia together with indigenous ecotypes were collected and an experiment was planned (in the 2$^{nd}$ Year) to study the forage production, nitrogen fixation and soil N accumulation of indigenous and exotic ecotypes of white clover (*Trifolium repens* L). Data were collected for 2 seasons (spring 2004-autumn 2004). Total average values for height, number of stolon, length of stolon, number of leaves, and leaf area were 13-50 cm;, 9-20; 2-4 cm; 23-81, and 7-16 cm$^2$, respectively. Total herbage dry matter yield (DMY) in the indigenous and exotic ecotypes varied between 0.5-2.3 and 3.6-4 Mg ha$^{-1}$, respectively. All the ecotypes showed substantial

nodulation potential and the number of nodules in plant roots ranged from 65-119 confirmed the presence of indigenous rhizobium population in the soil. The N contents of harvested herbage of white clover were 2.3-3.0% compared to 0.85% in the grass while the estimated rates of N2-fixation were 26 kg N $ha^{-1}$ in the indigenous to 79 kg N $ha^{-1}$ in the exotic ecotypes. Protein content of white clover was 14-19% compared to 5% in the indigenous grass species. Total organic C and N in control soil were 8.5 and 0.75 g $Kg^{-1}$ which increased significantly to 13.1 and 0.93g $kg^{-1}$ in soil under white clover.

Plant nutrient content of N.P.K, Ca, Mg, Fe, Mn, Cu and Zn were determined in the forage of white clover while pure grass was used as control/check. Mineral nutrient contents in white clover were substantially greater than those found in the grass. Among macronutrients, the contents of P and K were 0.32 and 1.96%, while the contents of M, Ca and Mg were 2.61, 1.10 and 0.29%, 2-3 fold to the content found in the grass. Micronutrients also showed similar trend and the concentration of Fe, Mn, Cu and Zn were 192, 86, 31 and 49 mg kg-1 almost doubled than those found in the grass. The ratio between Ca/P, Ca/Mg, Ca/K K/Mg, and K/P was 3.9, 4.0, 0.6, 6.8 and 6.2, respectively showing positive balance of mineral nutrient elements in white clover. Results indicated that introduction of white clover in our pastoral ecosystem can provide forage with high nutritional value that can result in increased level of animal production and allows for high stocking rates.

Rhizobium population in soil of three locations from where white clover germplasm was collected was in the range of $3.1 \times 10^{-5}$ -$5.8 \times 10^{-6}$. Isolation studied indicated that all strains showed homology to a typical rhizobium strain and identified as rhizobium on the basis of growth pattern and other testing parameters. The isolates were Gram negative, small rods and acid producing fast growers with a mean generation time in between 2.7 hrs to 3.4 hrs. Isolates from Nusiral, Haifa, Tollipir, Khaigala and Rawalakot had larger surface charge than isolates from irrigation and Banjosa. Plant infectivity and competitive test showed significant increase in plant growth and root nodulation by all the isolates on their respective hosts. The project results are useful for identifying the isolates under laboratory conditions and developing successful inoculation strategy of production of white clover in sub-humid region of Himalaya.

Residual effect of white clover to the following maize crop was also studied at the end of the research project. Dry matter yield (DMY) in the control treatment without clover addition was 5387 kg $ha^{-1}$. The grain yield was also significantly affected by the introduction of clover and 28% increase in yield (over control) was recorded due to the clover cultivation. White clover also increased the major nutrient uptake by maize plants and the concentration of major nutrients in soil was also substantially increased.

---

| | |
|---|---|
| **Project No.** | **P-AU/Agr (283)** |
| Project Title: | Epidemiological and Pathological Study on Tuberculosis in Food Animals and Its Association with Human Infection |
| Duration: | 3-Years |
| Date of Initiation: | 01.07.2002 |
| Date of Completion: | 29.03.2007 (extension) |
| Final Report Received: | 17.04.2008 |
| Location of Scheme: | University of Agriculture, Faisalabad |
| Principal Investigator: | Prof. Dr. Muhammad Tariq Javed |
| Total Expenditure: | Rs. 633,461/- |

**Main Objectives:**

- To study the prevalence of the disease in animals.
- To establish an effective diagnostic protocol for diagnosis of TB in animals.
- To identify various *Mycobacterium* species involved in causing the disease in animals along with their prevalence.
- To study the effect of disease (clinical and non-clinical) on blood parameters.
- To isolate *Mycobacterium* from various secretions, excretions of the infected (positive) animals (a possible source of human infection) to suggest a better prophylactic programme to prevent the spread of disease.
- To study the prevalence of disease in human in direct contact with positive animals.

**Summary of work done:**

The prevalence of tuberculosis recorded in buffalo, cattle, sheep, goats and zoo animals was 8.3, 0.9, 2.0 and 3.3%, respectively. In buffaloes, it varied from as low as 8.5% to as high as 22% at Government Livestock farms (GLF) with an overall prevalence of 11.3%. While in around two cities studied it varied from 2.3-2.7% with an overall prevalence of 2.66% in cattle, it varied from as low as 0.0% to as high as 9.2% at Government livestock farms, while it was 0.9 and 2.7% around Faisalabad and Okara, respectively. The mean age, live weight, number of calves produced, total milk produced per lactation and lactation length of buffaloes was 10.8 years, 542.9 Kg, 4-5 calves, 2156.5 liter and 258.4 days lactation, respectively at Government farms. It varied significantly in age groups, live weight groups and number of calves produced groups in buffaloes kept at GLF. The data also revealed significant difference between buffaloes of GLF and two cities. The data of cities of buffalo also revealed significant difference in age groups, milk production groups and status of buffalo groups. The mean age, live weight, number of calves produced, total milk produced per lactation and lactation length of buffaloes was 10.2 years, 377.8 Kg, 5-7 calves, 1773.5 liter and 239.7days, respectively at GLF. The data of cities of cattle revealed significant difference between live weight groups and age of cattle. The data of sheep of GLF revealed significant difference between GLFs, age groups and breeds of sheep, only 0.6% of sheep at Okara showed positive reaction to bovine PPD. The data of goats at GLFs showed prevalence of as low as 1.6 to as high as 3.4% with significant difference between age and live weight groups. However, not a single case could be recorded in goats tested around two cities. The hematological values showed significantly low values of RBC, WBC, HB and monocytes in buffaloes. Total serum and plasma proteins and fractions showed significantly higher values in positive reactor buffaloes. The data of cattle showed significantly lower values of RBC, PCV and neutrophil count in positive reactor buffaloes. However, lymphocyte count was significantly higher in positive reactor cattle. Serum total proteins and albumin values were significantly lower in positive reactor cattle, while serum globulins were significantly lower values of RBC, PCV and neutrophil count in positive reactor cattle. The data on hematological parameters in sheep and goat showed non-significant difference in hematological values between positive and negative reactor sheep and goats, except that of basophile which were significantly higher in positive reactor goats. A total of 30 (15 positive and 15 doubtful) buffaloes, and 30 (15

positive and 15 doubtful) cattle tested with CCT test were tested with gamma interferon test kit. Out of these, 3 of the doubtful reactor buffaloes and 4 of the doubtful reactor cattle showed positive gamma interferon test result. While 2 of the buffalo from doubtful reactor group showed positive reaction to avian PPD used in gamma interferon test. This suggests that 2 of the buffalo had disease other than caused by *M. bovis*. A total of 13 *M. bovis*, 3 *M. avium* and 9 atypical mycobacteria were isolated on slants of Stone-brinks medium. The *M. bovis* isolates were sensitive to all drugs tested except pyrzinamide. While all other isolated belonging to *M. avium* and atypical mycobacteria were found sensitive to four drugs tested for antibiotic sensitivity. Out of the 13 *M. bovis* isolates, 6 were isolated from milk samples, while 7 from nasal secretion samples. All the *M. avium* isolates were obtained from faucal samples along with those of atypical mycobacteria. Only in single case, atypical mycobacteria was isolated from samples of flies. 15.9 percent of farm worker were found positive with rapid test which need further investigations of their contact role in getting or spread of infection. A total of 63 farm workers were tested with rapid test for tuberculosis at 10 Government Livestock Farms. Out of these, 10 (15.9%) workers were found positive at 6 farms, while at 4 farms no worker was found positive among the tested individuals.

---

| | |
|---|---|
| **Project No.** | **P-AU/Bio (246)** |
| Project Title: | Development of Subunit Vaccine(s) and Sensitive Diagnostic Test(s) For Controlling Infectious Bursal (Gumboro) Disease of Poultry. |
| Duration: | 3-Years |
| Date of Initiation: | 1.7.1998 |
| Date of Completion: | 30.6.2001 |
| Final Reports Received: | 25.4.2006 |
| Location of Scheme: | University of Agriculture, Faisalabad. |
| Principal Investigator: | Dr. Iftikhar Hussain |
| Total Expenditure: | Rs.7,88,735/- |

**Main objectives:**

- Delineate viral polypeptides sodium using dodecyl sulphate polyacrylamide gel electrophoresis (SDS-PAGE).
- Identify common immunogen(s) by Western immunoblotting.
- Develop vaccine(s) against IBD containing the common immunogen(s) with different adjuvants.
- Evaluate the subunit vaccine(s) for sero-conversion and protection.
- Clone and express the immunogen(s) which provided best results as regards seroconversion and protection.
- Evaluate the expressed subunit protein(s) for large scale usage.
- Develop specific and sensitive ELISAs for detection and quantification of anti-IBDV antibody and IBDV antigen.

**Summary of Work Done:**

Infectious bursal disease virus (IBDV) from field outbreaks was purified by cesium chloride gradient certification and collected at density of 1.33 g/ml. The partially purified IBDV from seven different areas of Pakistan was characterized by SDS-PAGE and adapted in embryonated chicken eggs through serial passages. SDS-PAGe was performed on each burse-derived, embro-derived and live commercial vaccinal IBDV. Bursa-derived and embryo-derived IBDV revealed five polypeptide bands on segregation in 12.5% acrylamiode gel of molecular weights 28,32,41,62 and 90KDa approximately. No differences were observed among bursa-derived and embryo-derived IBDV in respect of plypeptide pattern, number and molecular weights but both differed from polypeptide maps of live commercial vaccines of IBDV. Out of four vaccines one exhibited six peptide bands, two revealed three bands and one presented only two polypeptides by SDS-PAGE. Immunogenic proteins of IBDV were determined by western blotting and two polypeptide 32 and 41KDs were eluted and used in preparation of subunit vaccines using different adjuvants.

Viral protein-2 (VP2), which was identified as immunogenic protein and the gen (VP2) was amplified, cloned and purified recombinant plasmid DNA was injected as DNA vaccine.

Protection conferred by this DNA vaccine was 94%, which was comparable to commercial IBDV vaccine.

Virus was confirmed through agar gel precipitation (AGP) test. Virus purification was done through the sucrose gradient centrifugation. Purified virus quantified through virus neutralization test was used for coating of the plates. Anti chicken antibodies were prepared in rabbits-lgG purified with satured ammonium sulphate precipitation technique was conjugated with horse radish; perolxidase (HRP). Orthophenylene diamine (OPD) substrate was used for enzyme activity. Optical density of the test samples was 0.661 to 7.62, 0.048 to 0.062 and 0.647 to 0.640 that was measured through the ELISA reader. Results were comparable with those obtained by a commercial ELISA Kit (IDEXX).

Different adjuvants were used to prepare different subunit vaccines and protection level for each vaccine was assessed by challenge with virulent IBDV. Immune response of the chicken to subunit was the maximum of group receiving combined (32+41KDa) subunit vaccine (821 ELISA units at day 35) as compared with groups receiving single polypeptide as subunit vaccine (726 and 456 ELISA units 32 and 41KDa polypeptides, respectively). Protection against challenge of infectious bursal disease virus was maximum in group receiving both 32 and 41KDa polypeptide as subunit vaccine (100%) as compared with groups receiving 32KDa and 41KDa polypeptide singly (96% and 72%, respectively). In another experiment, the above monitored subunits were tried with liposomal and ISCOM adjuvants l , giving one or two shots of vaccines. Immune response was higher and protective of subunit prepared in positively charged form of liposomal vaccine and ISCOM. Vaccination with subunits 32 and 41KDa in combination prepared in liposomal or ISCOM adjuvants is the most suited to immunize the birds against infectious bursal disease virus. In present studies, this combination proved safe and best for immunization of chicken without immunosuppression.

---

| | |
|---|---|
| **Project No.** | **S-KU/Bio (344)** |
| Project Title: | Seed Dormancy Mechanism in Coastal Halophytes of Karachi |
| Duration: | 3-Years |

| | |
|---|---|
| Date of Initiation: | 1.8.2003 |
| Date of Completion: | 31.7.2006 |
| Final Reports Received: | 17.2.2009 |
| Location of Scheme: | University of Karachi |
| Principal Investigator: | Prof. Dr. M. Ajmal Khan |
| Total Expenditure: | Rs.10,61,881/- |

**Main objectives**:

- What are the dormancy mechanisms in seeds of coastal halophytes?
- What is the role of bracts in seed germination?
- Do seeds retain viability when exposed to extended hyper-saline conditions?
- What is the level of tolerance of the seed to light, salinity and temperature during germination?
- Do coastal halophytes form seed bank?
- What are type and rules of seed bank?

**Summary of Work Done:**

The object of research was to investigate the seed dormancy mechanisms with reference to seed storage, germinability and viability of five coastal halophyte species grouped in three categories;(1) succulent (*Archroconemium macrostachyum* and *A. indicum*), (2) secreting (*Limonium stocksii* and *Cressa cretica*) and (3) sedge *Cyperus arenareus*.

*Arthroconenium indicum* seeds germinated best (34%) in non-saline control at 15-25 C temperature regime and germinations decreased with both increase and decrease in temperature. Seeds packets buried in soil under natural, and enclosure exposed to ambient conditions and those stored in the laboratory showed the similar response. Seed of *A. macrostachyum* also showed about 90% germination at 15-25 °C. All seed burial experiments showed that seeds remained viable but dormant through the study period with less than 20% germination observed at various time intervals. *Cressa cretica* showed high level of innate dormancy with few seeds germinating in non-saline control at warmer thermoperiods. Exumed seeds showed little germination during monthly germination test up to 14 month

before losing viability. No significant difference was found in burial treatments. Seed of *Cyperus arenarius* germinated up to 60% at 25-35 °C and no seeds germination at cooler thermoperiod. After burial seeds became dormant and with the passage of time some seeds lost viability. Temperature had little effect on the germination of *L. stopcksii* where most seeds germinated at all temperature regimes. Most exhumed seeds germinated from various burial experiments. Seeds buried in natural condition have relatively higher dormancy.

Exposure to hyper-saline conditions (3,5 and 10% NaCI or seasalt) for 1,3,6,12,24 months showed variable response in different species. In the *A. indicum,* seeds survived high salinity exposure up to 9 months however, seeds germination progressively decreased with time. After one month seawater appears inhibitor however, there was no significant difference at other time intervals. In the case of *A. macrostachyum,* about 10% seeds germinated in all treatments. Seeds maintained viability after long exposure to hyper saline condition. *Cressa cretica* seeds showed some germination after 3 and 6 months of exposure to relatively lower salinity treatments. Seeds died after six months. *Cyperus arenarius* seeds showed no germination for 24 months in all treatments. After 24 months few seeds were germinated at lower salinity concentration. Higher seed germination was obtained in the seeds of L. stocksii after 1 month of hyper-saline exposure. More seeds germinated in NaCI treatment. Seeds became dormant after three months of exposure and remained dormant throughout the experiment period.

Seeds were soaked in different concentrations (1/8) of bract water extract for various incubacion time (1, 24, 48 hr). Seeds were later germinated in various salinity and seawater treatments. Germination of *A. macrostachyum, C. cretica* and *L. stocksii* seeds was not inhibited by bract extracts. *Cyperus arenarius* seeds showed reduced germination with increase in time of incubation and of bract concentration in both control and low salinity.

Soil samples were taken from the sites of *A. indicum* and *C. cretica* showed highest soil conductivity (8-10 dS m) and the lowest soil conductivity was analyzed in the soil sample taken from the site of *Cypoerus arenarius* (0.09 – 0.15 dS m). Soil pH is somewhat basic (-8.0) at all the five sites.

| | |
|---|---|
| **Project No.** | **P-AU/Bio (347)** |
| Project Title: | Development and molecular characterization of gametocyte vaccine(s) (local isolate) against avian coccidiosis. |
| Duration: | 3-Years |
| Date of Initiation: | 01.8.2003 |
| Date of Completion: | 31.7.2007 |
| Final Reports Received: | 12.7.2008 |
| Location of Scheme: | University of Agriculture, Faisalabad. |
| Principal Investigator: | Dr. Masood Akhtar |
| Total Expenditure: | Rs.832,330/- |

**Main objectives:**

- Molecular characterization of gametocyte antigen(s).
- Preparation of vaccine(s).
- Immunogenic response of vaccine against Coccidiosis.
- Evaluation of vaccine on the basis of mucosal, cellular, humoral and challenge responses.
- To replace the commonly available anticoccidial drugs with the vaccine(s) and to test its safety and feasibility for commercial use.

## Summary of Work Done:

Control of coccidiosis through vaccination is believed to be suitable, safe and effective mode in contrast to the use of coccidiostats in the commercial poultry feed. In the current study, gametocyte vaccine prepared from the local isolates of *Eimeria tenella* (*E. tenella*) was evaluated under field conditions. This study also includes the characterization of gametocytes of local isolates of *E. tenella*. For this purpose, egg propagated gametocytes from five isolates of *E. tenella* were subjected to sodium dodecyl sulphate polyacrylamied gel electrophoresis. Among the five samples processed, three isolates showed protein band of 49,23,27,65,24,90,22.75 and 13.20 kDa, while the two isolates of *E. tenella* missed the high molecular weight band of 49,23 kDa.

The comparative efficacy of local and an imported Livacox vaccine was investigated under field conditions; in paralled laboratory trials were also conducted. Criteria for evaluation include the cellular and humoral responses, live weight`gain and organ body weight; per cent mortality after challenge and number of oocysts shed in the litter; and lesion scoring.

Indirect ELISA was used to monitor the humoral response in vaccinated and control chickens. Results demonstrated significantly higher ($p<0.01$) antibody response in term of OD values in vaccinated groups as compared to control chickens. Significantly higher antibody levels in local gametocyte vaccinated group were recorded as compared to Livecox vaccinated group.

CMI response in vaccinated and control chicken was studied by modified splenic cell migration inhibition assay and the results were expressed in term of per cent migration iondex. Per cent migration index was lower in chickens vaccinated with Livacox vaccine, indicating higher CMI response as compared to local vaccine; although statistically this difference was non-significant ($p>0.05$).

In the laboratory trials, challenge experiment was conducted on day 21$^{st}$ post vaccination. Results revealed significantly higher ($p<0.05$) oocyst count in Livacox vaccinated group as compared to local gametocyte vaccinated chickens. Highest protection (75%) against mixed species of genus Eimeria was recorded in chickens vaccinated with gametocyte vaccines as compared to Lovacox vaccinated group.

The effect of the vaccines on live body weight gains was recorded on every third day post vaccination up to 21 days. Weight gains in gametocyte vaccinated chickens was significantly higher ($p<0.05$) as compared to imported, vaccinated and control group; although, statistically difference was non-significant ($p>0.05$). Similar trend was observed regarding live weight gains in all the field and lab experiments.

Organ body weight ratio on day 5$^{th}$, 14$^{th}$ and 21$^{st}$ post vaccination was calculated; significantly higher per cent organ body weight ratio was recorded in control group as compared to vaccinated. Further, the organ body weight ratio of the lymphoid organs, including spleen ,bursa of fabricious, ceacal, tonsil, thymus had higher values in chickens immunized with Livacox vaccine as compared to the local, gametocyte vaccinated chickens,

although the difference was non-significant ($p>0.05$). Similar trend regarding organ body weight ratio was observed in all the field and lab experiments.

In the lab trials, vaccinated and controlled chickens were challenged with 65,000 sporulated oocyst of mixed species of germs Eimeria (mainly *E. tenella*, *E. maxima* and *E. acervulina*) at 21st day post vaccination. Mean occyst per gram (OPG) of droppings in control group was significantly higher ($P<0.01$) as compared to vaccinated groups.

Further, survived and dead chickens during experiments after challenge were monitored for lesion scoring. Most of the chickens (70-72%) demonstrated severe lesions (3,0-4.0) in control group, while the local gametocyte and Lovacox vaccinated chicken demonstrated 78 and 85% mild to moderate lesions, respectively. Maximum protection (75%) against mixed species of genus Eimeria (*E. tenella, E. maxima and E. acervulina*) was recorded in gametocyte vaccinated chickens as compared to Livacox vaccinated chickens (70.40%).

---

| | |
|---|---|
| **Project No.** | **Biotech/P-AU/Med (24/1)** |
| Project Title: | Technologies Development for the Production of Gonadotropin from Animal Sources |
| Duration: | 2-Years |
| Date of Initiation: | 01.09.2007 |
| Date of Completion: | 28.2.2009 (Extension) |
| Final Report Received: | 12.5.2009 |
| Location of Scheme: | University of Agriculture, Faisalabad |
| Principal Investigator: | Dr. Nafees Akhtar |
| Total Expenditure: | Rs. 759,653/- |

**Main Objectives:**

- Qualitative and quantitative estimation of gonadotropin hormones secretions in the organ culture filtrate.
- Toxicity and stability of FSH in cell free culture filtrate in laboratory animals.

**Summary of work done:**

Suspension cultures were prepared using adenohypophysis of healthy cyclic buffaloes in cell culture medium (RPMI-1640) incubated in a carbon dioxide incubator providing a mixture of 10% CO2 and 90% air saturated at 38°C. Each cell culture flask was provided a stimulus by gonadotropin releasing hormone (GnRH) @ 10uL to enrich the gonadotrophs for the release of follicle stimulating hormone (FSH). Viable cell cultures were further incubated for 72 hours and crude extract was drawn from each culture flask by centrifugation and micro filtration technique. Concentration of FSH was estimated being 2.78 m IU/ml by FSH-ELISA technique. Thioglycolate and PPLO broth inoculated with crude extract drawn from cell culture of buffalo adenohypophysis showed no growth after 48 hours of incubation at 37°C and also no turbidity was observed even after 7 days.

Crude extract drawn from culture of buffalo adenohypophysis was injected to pre-pubertal female rabbits assigned randomly in T1, T2 and T3 group @ 0.25, 0.5 and 1.0 ml containing FSH concentration being 0.69, 1.39 and 2.78 m IU, respectively. Rabbits in control group were injected 1.0ml medium free from FSH. All experimental rabbits were treated for five days. Injecting crude extract collected from culture of buffalo adenohypophysis to rabbits did not cause hypersensitivity or toxicity and no pathological lesion was observed on the visceral organs. Mean (± SE) ovarian weight 22.25±0.57, 25.25±0.57, 29.13±0.57mg, and volume 0.27±0.02, 0.28±0.02, 0.26±0.02ml$^3$ for rabbits in group T1, T2 and T3, respectively, treated with crude extract containing varying amount of FSH were significantly ($P<0.01$) higher than rabbits in control group (16.63+0.57mg and 0.13±0.02 ml$^3$). Non-significant difference was found between rabbits assigned in group of T2 and T3 in respect of ovarian weight; moreover difference among T1, T2 and T3 was non-significant in respect of ovarian volume. Mean number 5.25±0.46, 6.00±0.46 and 8.38±0.46 of Graafian follicle (GF) on the ovaries of rabbit in group T1, T2 and T3 were significantly ($P<0.01$) higher than 0.13±0.46 found for control rabbits.

Experimental rabbits (T3) treated with crude extract drawn from culture of buffalo adenohypophysis containing FSH concentration 2.78m IU showed significantly ($P<0.01$). Decreased number of RBC (6.43±0.28 Vs 5.57±18x10$^6$/ u L) and significantly ($P<0.01$)

increased number of WBC (9.45±0.15 Vs 9.96±0.14 x$10^3$/ u L) in their blood. Mean PCV 36.75±1.31, 38.25±0.85 and 37.00±1.22% recorded for rabbits in T1, T2 and T3, respectively, was significantly (P<0.01) decreased to 29.75±0.48, 30.00±0.70 and 31.25 ±0.63% after treatment with crude extract containing varying amounts of FSH activity. However, differences among rabbits in group of T1, T2 and T3 were non-significant. Moreover non-significant difference was observed (34.75±1.03 Vs 35.50±0.65%) in respect of PCV% after treatment of rabbits in control group. Haemoglobin concentration (11.35±0.44 and 11.00±0.34g/dl) recorded for rabbits assigned in group T2 and T3 before treatment was significantly (P<0.01) decreased (10.10+0.19 and 10.15+0.47g/dl) after treatment, difference between T2 and T3 was non-significant. Moreover, non-significant difference was observed in T1 and control rabbits after treatment.

Mean serum creatinine level (0.75±0.07, 0.85±0.07 and 0.40±0.04 mg/dl) in the blood of pre-pubertal female rabbits in T1, T2 and T3 group, respectively, before the start of treatment was significantly (P<0.01) increased to 1.25±0.13, 1.33±0.19 and 0.93±0.11 mg/dl, after five days of treatment with crude extract drawn from culture of buffalo adenohypophysis. Whereas, non-significant difference (1.03±0.09 Vs 0.98±0.06 mg/dl) was observed in respect of creatinine level for rabbits in control group. Similarly, before the start of treatment mean level of BUN (15.00+0.91, 18.25+0.62 and 16.00+1.08 g/dl) in the blood of pre-pubertal female rabbits in T1, T2 and T3 group, respectively, was significantly (P<0.01) increased to 21.25±0.75 and 22.25±0.85 and 20.50±0.96 mg/dl after five days of treatment with crude extract drawn from culture of buffalo adenohypophysis. No difference was observed in control rabbits (23.25±0.48 g/dl vs 22.75±1.38 mg/dl) in respect of BUN level after five days of treatment with medium free from FSH activity.

It is concluded that crude extract drawn from culture of buffalo adenohypophysis remained sterile throughout the experimental period and did not cause hypersensitivity or toxic effects and pathological lesions on visceral organs of experimental rabbits. Moreover haematological picture was not much affected; however, FSH concentration present in the crude extract drawn from culture of buffalo adenohypophysis effectively increased the ovarian activity.

| | |
|---|---|
| **Project No.** | **Biotech/P-NIAB/Agr (44)** |
| Project Title: | Characterization of Pakistani wheat varieties by microsatellite markers |
| Duration: | 2-Years |
| Date of Initiation: | 01.7.2006 |
| Date of Completion: | 31.12.2008 (Extension) |
| Final Report Received: | 29.1.2009 |
| Location of Scheme: | Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad |
| Principal Investigator: | Dr. Nayyer Iqbal |
| Total Expenditure: | Rs. 924,180/- |

**Main Objectives:**

- Establishment of latest molecular marker facilities at NIAB and in Pakistan.
- Differentiation and characterization of Pakistani wheat varieties at molecular levels and to study the genetic variability among them.
- Identification of microsatellite markers specific to different varieties or in other words produce fingerprints of these varieties.
- Identification of microsatellite markers specific to the varieties exhibiting particular characters of interest.

**Summary of work done:**

It has been claimed that plant breeding reduces genetic diversity in elite germplasm which could seriously jeopardize the continued ability to improve crops. The main objective of this study was to assess the genetic diversity of Pakistani wheat varieties, examine the loss of genetic diversity in bread wheat during the change from traditional landrace cultivars (LCs) to modern breeding varieties, and recent trends of national wheat breeding programmes. A total of 29 SSR markers, representing at least one marker from each chromosome of wheat, were used to analyze the genetic diversity of 48 wheat varieties and 12 land races. All primer sets produced clear and strong expected amplifications. A total of 80 alleles were generated by the 29 loci with an average of 2.76 alleles per marker. A significant loss of genetic diversity was observed from the LCs to the elite cultivated varieties. Average genetic similarity between

landraces was 61% while varieties released after 1990 showed 73% similarity. Range of genetic distance observed between all possible pairs was from 1.41 to 4.90. More than 10% decrease in average genetic diversity was observed in the last 2 decades. It was also observed that most of the varieties released from one source showed comparatively lower diversity and varieties produced from different institutes also occasionally grouped together. These results indicate the utilization of common elite breeding material or interbreeding of released varieties that could be problematic in future.

Through this project facilities and technical expertise were established for microsatellite marker analysis in wheat which can be extended to any other crop of interest. Methodologies for fragment analysis have been established by utilizing simple vertical gel electrophoresis system and ethidium bromide staining technique without compromising the sensitivity of allele detection. Varieties and landraces could be distinguished using only a set of 20 markers and by combining multiplex PCR and multiple sample loading, microsatelllite markers provide fast and high throughput fingerprinting of large numbers of accessions from a germplasm collection. Information has been generated for wheat breeders regarding the genetic diversity of varieties/landraces that could be utilized for breeding varieties with broader genetic base and better adaptability. This project emphasizes the need of molecular marker base analysis and cataloging of local accessions and landraces collected by different gene banks. Identification and utilization of accessions possessing rare alleles for many different loci is extremely important for broadening the allelic diversity and the potential for cultivar improvement in wheat.

---

| | |
|---|---|
| **Project No.** | **Biotech/P-NIBGE/Envr (48)** |
| Project Title: | Cloning of raw starch digesting alpha amylase from *bacillus sp.* and its expression in *E. coli* |
| Duration: | 3-Years |
| Date of Initiation: | 30.09.2004 |
| Date of Completion: | 29.9.2008 (Extension) |
| Final Report Received: | 08.10.2008 |

| | |
|---|---|
| Location of Scheme: | National Institute of Biotechnology and Genetic Engineering (NIBGE), Faisalabad |
| Principal Investigator: | Dr. Romana Tabassum |
| Total Expenditure: | Rs. 949,300/- |

**Main Objectives:**

- Production and commercialization of *a.* amylase recombinant DNA technology gene cloning at national level for use in textile and food industry.
- Cloning and hyperexpression of thermostable gene into *E. coli.*
- Sequence analysis of *a.* amylase gene and encoded amino acid sequences which will be helpful in elucidation of structure and function of this amylase enzyme from indigenous *Bacillus* sp. Strain.

**Summary of work done:**

The project deals with the developments in biotechnology for the production of *a.* amylase from recombinant organism at industrial level in Pakistan. The project will help to produce the alpha amylase by recombinant organism which will produce enzyme at low cost and has high liquefaction ability. This will attract the consumers of *a.* amylase who may like to invest in installing their own industry for production of amylase enzymes. The demand for bacterial thermostable *a.* amylase has increased many fold in recent years because of launching of biotechnological plants and policies by many countries for the utilization of renewable starch and starchy substrates to obtain a variety of products of industrial and economic importance. Simultaneously, it has been agreed by internationally recognized scientific bodies that reduction in the capital and recurring expenses of the saccahrification process for starch is necessary for achieving acceptable economics and profit. The critical and evaluative analysis of various possible modes for the reduction in the cost of starch hydrolysis considered in the present project identifies the liquefaction of starch by bacterial *a.* amylase as one of the costliest unit operation in starch hydrolysis, mainly because of the cost of the enzyme. It also reveals the potential for cost reduction in bacterial *a.* amylase production by genetically engineered organism.

Raw starch degrading amylases are commercially important enzymes in the beverage, food and textile industry. The global market for starch enzymes sales in 1996= US $ 156 million. 2000= US $ 300 million. Currently the country is importing *a.* amylase to meet the indigenous requirements for use in textile (sizing and desizing) and food industries consuming huge amount of foreign exchange. Still there is no industry which is producing *a.* amylase. We are spending Rs. 400-700 million/annum on import of industrial enzymes.

The major application of amylases in the food industry is the saccharification of starch in the manufacture of diverse starch-derived products. Gelatinization and liquefaction of starch slurry, a required pre-treatment, are catalysed by *a.* amylase at 70° C and above 95° C, respectively. Therefore, amylases capable of digesting raw starch (raw-starch digesting amylases) [RSDA] have drawn the attention of researchers as a possible replacement for this energy-consuming and economically costly step. Certain fungi and bacteria are known to produce RSDA, and some of these amylases have been purified and characterized. We have isolated, *Bacillus licheniformis* RT7YC strain, a new RSDA bacterium from soil samples. We have also characterized RSDA for parameters of temperature and pH optima without CaCl2. The complete composition of the medium and conditions for fermentation aeration, agitation, temperature and pH for optimum enzyme production. The enzyme is also purified and characterized and is found of desired process quality.

*Bacillus licheniformis* RT7YC strain was used to produce extracellular *a.* amylase and production was studied in submerged fermentation kinetics. Effect of maize starch was investigated to study the fermentation kinetics for optimum enzyme production. Cultural conditions such as effect of substrate concentration, temperature and pH of this strain for *a.* amylase production were optimized. The substrate consumption rate and cell mass formation was determined to study the growth and enzyme production kinetic parameters.

The crude native and recombinant *a.* amylase was purified by ammonium sulphate precipitation, ion exchange and gel filtration chromatography. Purified *a.* amylase showed optimum activity at temperature 55-60° C. The enzyme showed optimum activity at pH 8-9. To check the purity of enzyme, the purified *a.* amylase enzyme was subjected to SDS-Polyacrylamide gel electrophoresis and a single band of 112 KDa was observed after

coommassie blue staining. The zymographic technique showed activity staining of purified enzyme on starch SDS-Polyacrylamide gel.

We also have developed the probe to mark the RSDA in genomic DNA. Southern hybridization was also carried out. To further investigate this enzyme, we have cloned, sequenced, and expressed in *Escherichia coli* the RSDA gene of the *Bacillus licheniformis* RT7YC strain. The 16s RNA and alpha amylase gene sequence were submitted to gene bank under accession no. EF644416.1 and EF644411. The enzyme produced by *E.coli* was purified and characterized for themostability, pH and effect of CaCL2 and NaCl.

The *a.* amylase produced by this indigenous *Bacillus licheniformis* RT7YC strain was moderately thermophilic and active at neutral and alkaline pH. These properties would allow its wide applications in different industries.

---

| | |
|---|---|
| **Project No.** | **Biotech/P-UAAR (220)** |
| Project Title: | Cloning and sequencing of major DNA components of Banana bunchy top virus from Pakistan |
| Duration: | 3-Years |
| Date of Initiation: | 01.11.2005 |
| Date of Completion: | 30.10.2008 |
| Final Report Received: | 17.11.2008 |
| Location of Scheme: | PMAS- Arid Agriculture University, Rawalpindi |
| Principal Investigator: | Prof. Dr. S. M. Saqlan Naqvi |
| Total Expenditure: | Rs. 873,324/- |

**Main Objectives:**

- Cloning of putative coat-protein gene/component.
- Establishment of genetic transformation system in Banana.
- Induction of cross-protection in Banana through anti-sense transformation of BBTV coat protein gene,

**Summary of work done:**

Banana is very important fruit crop of Pakistan's domestic economy. Banana industry is facing a problem of viral disease the Banana Bunchy Top Disease that is caused by BBTV. BBTV was first reported from Fiji in 1889 and 1890 and then BBTD was reported from Taiwan in 1900 and from Egypt in 1901. BBTV is a multi-component isometric virion of 18-20nm, containing mostly six integral circular single stranded DNA components, each about 1 Kb in size. Two major components, BBTV DNA-1 which encodes Master Replicase gene and BBTV DNA-3 encoding a 19.3 kDa viral coat proteins, have been extensively studied and used in characterization of different isolates of BBTV.

This study was based on PCR amplification, cloning and sequencing of these two major components of BBTV isolated from banana growing area of Pakistan. Both the components were successfully cloned and sequenced from an isolate (TJI) belonging to Tandojam area in Pakistan. The phylogenetic analysis showed that isolates present in Pakistan belongs to the South Pacific sub-group of BBTV; the results were presented internationally and published in an international journal. Difference in the conservation of the nucleotides and phylogenetic relationships indicate that different components in the BBTV genome are under different extant of evolutionary pressures. A RNAi based construct was also designed against the coding region of the master rep (M-Rep) of this isolate. The similar coding region was also cloned inframe with the reporter GFP so that effectiveness of the construct can be monitored in the non-host systems, like tobacco.

Need exists to sequence remaining components from more isolates to have a detailed analysis of the BBTV population in Pakistan, a prerequisite to have a successful genetic resistance, along with the construction of RNAi constructs against other viral proteins.

---

| | |
|---|---|
| **Project No.** | **C-QU/Chem (203)** |
| Project Title: | Synthesis of chalcones, imminochalcones and thiochalcones having potential industrial applications |
| Duration: | 3-Years |
| Date of Initiation: | 01-11-2004 |

| | |
|---|---|
| Date of Completion: | 30-10-2007 |
| Final Report Received: | 12-05-2008 |
| Location of Scheme: | Quaid-i-Azam University, Islamabad |
| Principal Investigator: | Dr. Aurangzeb Hasan |
| Total Expenditure: | Rs. 539,304/- |

**Main Objectives:**

- Synthesis of chalcones, imminochalcones and thiochalcones.

**Summary of work done:**

On the successful completion of the project eight chalcone, twenty two imminochalcones and another series of fifteen variably halogenated 2'-hydroxychalcones were synthesized which were then converted to their respective fifteen flavonols. In addition, two chalcones were converted to aurone which is considered to be a very rare class of flavonoids. However, we were unable to synthesize the desired thiochalcones due to their unstable characteristic. However, instead another series of twelve flavones were synthesized which were then easily converted to their thio-analogues. All of the eighty six (86) compounds were characterized on the basis of their physical data, UV, FT-IR, EI-MS and NMR spectral data.

The synthesized chalcones, iminochalcones, 2'-hydroxychalcones, flavonols, flavones and thioflavones were tested for their biological activities. The results of bioactivity show that the iminochalcones are more active than their parent chalcone. All the synthesized compounds of the variably halogenated 2'-hydroxychalcones and their respective flavonols were tested for their antifungal activity against a number of test organisms. Most of them were found to be active against the tested fungi and in some cases even stronger than the standard antifungal drugs. Furthermore, antibacterial activities of 4-thioflavones were carried out and these have been found to be active against most of the tested bacterial strains. It can thus be said that these series of flavonoids can act as strong antibacterial as well as antifungal agents and probably can supplement or replace the already marketed antifungal and antibacterial drugs.

| | |
|---|---|
| **Project No.** | **C-QU/Chem (376)** |
| Project Title: | Synthesis and Biological Evaluation of β-Hexapeptide Analog of Neurotensin NT (8-13). |
| Duration: | 2-Years |
| Date of Initiation: | 01-09-2003 |
| Date of Completion: | 30-06-2006 (extention) |
| Final Report Received: | 12-03-2008 |
| Location of Scheme: | Quaid-i-Azam University, Islamabad |
| Principal Investigator: | Dr. Javid H. Zaidi |
| Total Expenditure: | Rs. 1,005,465/- |

**Main Objectives:**

- Synthetic work will be executed jointly in laboratories of Federal Government Post Grad. ate College and HEJ Research Institute of Chemistry, U..iversity of Karachi.
- Purification of synthetic compounds will be carried out by using different types of chromatographic techniques, structure characterization will be accomplished with the help of different spectroscopic techniques like NMR, Mass, U.V, IR etc.
- Biological screening will be carried out in pharmacological section by using various parameters.

**Summary of work done:**

The amino groups of all amino acids Arg, Pro, Tyr, Ilue and Lue, which are required to synthesize β-hexapeptide analog of Neurotensin, NT(8-13) were protected by protecting groups BOC(t-Butoxy carbonyl) and Cbz (benzyoxy carbonyl). We have succeeded to synthesize ter. butyl esters via mixed anhydride. Though we are still working to optimize the yields of this reaction. This protocol is cost effective and much simpler than those reported in literature.

We also carried out a comparative study of esterification of N- protected amino acids with methoxymethyl chloride, n-butoxymethyl chloride and thiomethyl chloride, all these ester were snthesized by simple methods then reported in literature.

Synthesis of benzyl chloromethyl ether in *situ* and its use to protect bifunctional hydroxyl compounds as benzyloxymethyl ethers is first time reported. This methodology was extended to alkylate the N-protected L-amino acids.

After protection of amino acids we sucessfully converted these protected amino acid in to β-amino acids. We optimized the reaction conditions for BOC deprotection of β-amino acids and β-peptdies, along with improvement in the reaction conditions for ester hydrolysis of β-amino acids and β-peptides, then finally these β-amino acids were converted into β-peptides. These final products β-peptides and intervening intermediates were screened for different biological activities.

---

| | |
|---|---|
| **Project No.** | **C-PINSTECH/Engg (39)** |
| Project Title: | Study of Bonding between Zircaloy and Stainless Steel |
| Duration: | 2-Years |
| Date of Initiation: | 15-07-2003 |
| Date of Completion: | 31-08-2006 |
| Final Report Received: | 22-09-2006 |
| Location of Scheme: | PINSTECH, Islamabad |
| Principal Investigator: | Dr. Javed. Iqbal Akhtar |
| Total Expenditure: | Rs. 286,137/- |

**Main Objectives:**

- To investigate the quality and strength of the bonding between nuclear fuel cladding material zircalloy-4 and stainless steels A1S1 304, 316.
- To study the Microstructure of the Weld Zone, Heat affected Zone and Diffusion Zone using scanning electron microscope, electron microprobe, X-ray diffraction and transmission electron microscopy.

**Summary of work done:**

Joining of materials is one of the major requirements for the development and manufacturing of parts of all equipments. These joints are produced by various techniques including welding,

brazing, diffusion bonding, etc. The major problem with the conventional welding is the production of wider diffusion and heat affected zones which can change the chemistry of the joining materials. The job becomes further difficult when dissimilar materials are involved. The major difficulty is the difference in the physical properties such as melting temperatures and thermal expansion coefficients of the two alloys which hinders the controlled melting on both sides of the weld joints. Furthermore, the two materials become metallurgically incompatible due to the unwanted phases produced due to the interaction of elements of the two materials diffused in to one another. Electron Beam Welding (EBW) is a fusion process for joining metals which uses a highly focused beam of electrons as a heat source. This causes almost instantaneous local melting and vaporization of the work piece. However, it is always difficult to optimize proper conditions for welding of dissimilar materials. Many of the problems of welded joints between the dissimilar materials can be overcome by the process of diffusion bonding. Diffusion bonding involves the creation of a solid-state bond by interdiffusion across the interface between the two materials. Zircaloy and stainless steel are important materials in the reactor technology as the first is used as cladding material for the fuel elements and the second is used as structural material. Zircaloy-4 and Zircaloy-2 bonded with stainless steel (304, 304-L, 316 and 316-L) are being used extensively in various technological design situations concerning especially the pressure tubes and fuel elements in some nuclear power plants. The joining of zirconium alloys to steel is also frequently required in order to reduce the cost of components in which Zr alloys must be used. Joining of these two materials by fusion welding is undesirable because brittle intermetallic compounds such as $ZrFe_2$ are formed in the welded zone.

Furthermore, difference in the thermal expansion coefficients, allotropic phase transformations, and elastic moduli of Zr and steel cause high residual stresses during the cooling of welds. Keeping in view the importance and applied nature of these joints, a project was carried out to characterize the joints between the materials. Two roots were followed to generate the joints. Samples were bonded by diffusion bonding technique with and without Ti interlayer. These joints have been characterized by scanning electron microscope, energy dispersive system and x-ray diffraction. Electron beam welding was also conducted. It was concluded that the diffusion bonding was very successful when Ti interlayer was used.

| | |
|---|---|
| **Project No.** | **PSF/ILG/029/03** |
| Project Title: | Pharmacognosy of Medicinal Plants of Pakistan: Determination of Active Constituents |
| Duration: | 3-Years |
| Date of Initiation: | 14-02-2005 |
| Date of Completion: | 31-03-2008 |
| Final Report Received: | 01-04-2008 |
| Location of Scheme: | PCSIR Labs. Complex, Peshawar |
| Principal Investigator: | Dr. Lajber Khan |
| Total Expenditure: | Rs. 739,413/- |

**Main Objectives:**

- Conducting survey of medicinal plants and integration of the information collected on the most commonly and widely used local herbal resources for proper scientific evaluation.
- Selection, collection and identification of the most promising plant species.
- Post harvest treatment, extraction and resolution of crude extracts. Phytochemical screening and separation of major constituents.
- Pharmacological and Toxicological screening of purified constituents and formulation studies on crude, purified extracts and constituents into dosage form.

**Summary of work done:**

With a view to achieving the objective of the project, field studies on medicinal plants indigenous to Gali Forest, Ayubia, Abbottatabad, Mansehra, Shinkiari, Batagram, Thakot Bisham, Jaglot, Gilgit, Gakuch, Skardu, Deosai national park and Kaghan valley were performed through holding interactions with herbalists, practitioners, collectors and crude drug dealers. During survey, ecological, botanical and climatic indicators at the selected sites were studied and Video documentary on valuable species in the natural habitat prepared. For scientific studies, herbarium specimens, plant materials and seeds were identified, collected, preserved and shifted to PCSIR Labs. Peshawar. This survey yielded valuable information on

most commonly and widely used herbal resources and promising plant species. It is satisfying to mention that as a result of field studies, up-gradation of Herbarium through incorporation of 97 voucher specimens and cultivation, propagation and acclimatization of 35 medicinally important herbs from the seeds at the experimental garden developed under the project were carried out.

For chemical screening and determination of major constituents responsible for therapeutic effects of the selected herbs, *Stevia rebaudiana* indigenous to Paraguay and Brazil which tastes about 300 times sweeter than sugar and has gained importance as a natural sweetener in the food industry of Japan, Korea, Europe, U.S.A was analysed. The herb has been successfully introduced in Pakistan by the Qarshi Herb Centre Hattar through Tissue Culture Techniques and Steviosides, the active ingredients have been isolated from the leaves through a laboratory developed procedure. Another chemical known as artemisinin, regarded as a highly potent antimalarial drug with unique structure and activity, used in the Traditional Chinese Medicine for the treatment of fever and malaria was explored in herbs botanically classified as, *Artemisia vulgaris, Artemisia maritime, Artemisia kuramensis, Artemisia absinthium* (Parachinar), *Artemisia absinthium* (Qarshi Tissue Centre), and *Artemisia annua.* The results suggested the presence of artemisinin in the *Artemisia annua* whereas the rest of herbs appeared lacking the ingredient. Silymarin extracted from *Silybum marianum* seeds is an official herbal drug endowed with marked antihepatotxic effects. Using the indigenous raw materials, a viable procedure for extraction and purification of silymarin was developed. Another class of chemicals known as Alkaloids, find wide application in the preparation of drugs, therefore alkaloidal contents in *Berberis lyceum, Cissampelos pareira* and *Ephedra nebrodensis* were quantified. In addition, flavonoids and phenolics compounds regarded as potent anti-oxidant were determined in *Opuntia monocantha* and *Hypericum perforatum.* Other valuable herbs which contain potent biologically rich compounds that assist in promoting numerous physiological responses were standardized for determination of furastanol/protodioscine content including *Tribulus terrestris* (Fruits), *Withania somnifera* (Roots), *Asparagus adscendens* (Roots), *Mucuna pruriens* (Seeds) and *Lepidium sativum* (Roots). Seabuckthorn has been listed as a drug of choice in the Chinese pharmacopoeia. Oil extracted from seeds contains bioactive substances that has been useful as an aid to patients undergoing cancer therapy, reduction of cardiovascular risk factors, gastrointestinal ulcers,

skin disorders and as a remedy of liver cirrhosis. Using the seeds, Seabuckthorn oil was extracted and further evaluated for physico-chemical characteristics according to reported methods. For determination of Vitamin C, selected species used as herbal drugs, comprising *Withaina somnifera* (roots), *Citrullus colocynthis*, *Hippophae rhamnoides* and *Glycyrrhiza glabra* were studied. Also chemical analysis of herbs, *Galium aparine, Prangos pabularia, Capparis spinosa* and *Echinacea purpurea* for the determination of active ingredients was carried out on account of their biological effects and usage in the traditional system of medicine. Chemical analysis of *Perilla frutescens* leaves containing a volatile component which is 2000 times sweeter than sucrose and *Lonicera japonica* commonly known as Honey suckle has remained incomplete because these species were in the process of domestication. Finally the impact of environmental pollution over the growth, development and active constituents of herbs used in the traditional system of medicine was determined.

Regarding pharmacological and toxicological screening of the constituents, antioxidant activities of *Opuntia monocantha* and hepatoprotective effects of *Silybum marianum* were monitored. Also formulation of standardized herbal extract containing furastanol/protodioscine into dosage form recommended as a treatment for female infertility, impotence and low libido in both men and women was accomplished.

Products development and feasibility for selected standardized extracts could be organized in collaboration with other institutions.

---

| | |
|---|---|
| **Project No.** | **US-NSF/C-QU/Phys (18)** |
| Project Title: | Magnetic and Structural Studies of Nanoparticles. |
| Duration: | 3-Years |
| Date of Initiation: | 01-10-2003 |
| Date of Completion: | 15-03-2007 (6- month extension) |
| Final Report Received: | 07.05.2008 |
| Location of Scheme: | Quaid-i-Azam University, Islamabad |
| Principal Investigator: | Prof. Dr. S.K. Hasanain |
| Total Expenditure: | Rs. 1,097,833/- |

**Main Objectives:**

- Understanding the relationship between the physical particle volume and the magnetic switching volume.
- Determination of the physical factors which affect and limit the coactivity (He) of small particles and the mechanisms of magnetization reversal.
- Determining how various sources contribute to "media noise" at the Nano level. This includes "switching noise" as well as noise due to inter-particle (or in general inter-gain) interactions
- Obtaining a clear understanding of the factors affecting the stability of the recorded moment. This includes thermal as well as inter particle effects.
- Understanding the factors limiting the high frequency response (nano-second) of small particles.

**Summary of work done:**

We have successfully met our targets both with regards to the collaborative and the local aspects of the project. A successful collaboration was established with the University of Delaware, Department of Physics leading to an exchange of scientists between the two institutions. The collaboration has led us to establish a vigorous program in nanoparticle magnetism as can be evidenced from the large number (eight) of publications in high quality international journals and a number of conference presentations. The Research Associate appointed under this project has successfully completed his work and is expected to submit his PhD thesis by June 2008. Eleven M. Phil. theses have been completed during the course of this work on topics directly related to the project theme viz. nanoparticle magnetism. The P.I. visited the University of Delaware for a period of almost three months (October-December 2004) during which period, work on the smaller size nanoparticles (d<10nm) was initiated and several magnetic measurements were made. The US counterpart, Prof. Ismat Shah, also made a working visit to QAU in 2005 and data analysis etc were carried out. This project has aimed at studying the variation in magnetic properties with the size and microstructure of magnetic nanoparticles. It aims at developing the facilities at our laboaratory at Quaid-i-Azam University while continuing the work on advanced aspects of nanomagnetism in collaboration

with the US counterpart. Work on the composites of Fe nanoparticles and polymer composites was initiated and was completed and two papers based on it has been published. Previously completed work on the larger Fe-FeO particles has also been published in a leading international journal. We have also conducted and completed experiments on the smaller size Fe nanoparticles and have studied the variation of different magnetic aspects and correlated them with the changes in the size and surface morphology. Hysteresis, exchange bias, magnetic relaxation etc has been studied in detail. Local work at QAU was performed on the synthesis and magnetic and structural studies on the hematite (alpha FeO) particles, $ZnFe_2O_4$ and ZnO nanoparticles have been carried out.

The parameters for the successful preparation of various materials and phases viz. temperature and concentration were successfully identified. The hysteresis, temperature dependence of magnetization and other magnetic aspects were studied in detail. A new aspect of the work on magnetic nanoparticles was initiated and involves the fabrication and study of ZnO based nanoparticles with dilution of magnetic impurities.

---

| | |
|---|---|
| **Project No.** | **C-QU/Phys (127)** |
| Project Title: | Laser Induced Breakdown Spectroscopy. |
| Duration: | 3-Years |
| Date of Initiation: | 01-07-2003 |
| Date of Completion: | 30-06-2006 |
| Final Report Received: | 28-11-2007 |
| Location of Scheme: | Quaid-i-Azam University, Islamabad |
| Principal Investigator: | Dr. Raheel Ali |
| Total Expenditure: | Rs. 697,184/- |

**Main Objectives:**

- To identify the metal contents in alloys by the emission plasma generated as a result of an intense laser beam.
- Intend to study also the nonmetals.
- To train manpower in Pakistan.

**Summary of work done:**

By using various harmonics of Nd:YAG laser, we have produced the plasma in Cadmium, Copper, Mercury and Zinc metals. Emission spectra of this plasma were recorded by using a spectrometer that covers the wavelength range from 200 nm to 720 nm. Electron temperature has been measured by identifying various transitions in the emission spectrum. Observed spectra show dominant transitions corresponding to the atomic and singly ionized metals being probed by the intense laser beam. The intensity of these lines decreases as the plasma moves away from the target material. Close to the surface target the ionic lines have been observed to be dominant as compared to the neutral atom transitions. This behavior reverses as plasma expands. A comparative study of the plasma has been made by using three different wavelengths i.e. 1064 nm, 532 nm and 355 nm, which lie at Infrared, visible and ultraviolet region of the spectrum, respectively. The variation in the spectral line shape has also been studied, and this lead to the observation that stark effect is the dominant broadening mechanism, originating due to the presence of charged species. The other broadening mechanisms like, Doppler and collision have a small effect. By fitting the Lorentzian profile to the experimental observed spectral lines full width at half maximum (FWHM) have been extracted. This further has been used to calculate the electron density in the plasma. These two parameters i.e. electron temperature and number density have also been measured by varying the distance along the direction of plume. Variations of these parameters with laser irradiance and ambient gas pressure have also been studied. These measurements of temperature and electron density, extracted from the spectral line intensity and broadening, require plasma to be optically thin. We have estimated the self absorption to be 4 %, for all the transitions used in the measurement of temperature and electron density. The excitation temperature is found to decrease with the distance from the target surface. Same behavior has been observed for the electron number density. This is due to recombination of electrons and ions in the plasma. Due to this recombination system goes from electron-ion charged system to lower energy neutralized state. There are two processes of electron ion recombination: radiative recombination and three-body recombination. In radiative recombination electron goes to the unfilled orbit, resulting in photon whose energy is given by the sum of the initial kinetic energy and binding energy of the final bound state. While in case of three body

recombination, the energy is carried by the electron. In our case three-body recombination is the dominant process.

We have also determined the excitation temperature and electron number density for different values of laser irradiance, using three different wavelengths of Nd:YAG laser. Here we kept the distance from the target fix. Since absorption/reflection from a surface depends upon the wavelength shined, at the same value of the laser irradiance, for three different wavelengths, the values of the electron temperature and electron density are different.

In addition, we have studied various plasma parameters as a function of ambient air pressure. For this purpose, air pressure in the chamber was varied from 1000 mbar to 15 mbar. It has been observed that at higher pressures, plasma is confined to a smaller volume, resulting in low expansion rate and increased cooling rate. The electron temperature and electron number density was found to decrease with the decrease in the air pressure. This is attributed to the fact that at low pressures plasma expands freely. Plasma is more confined at atmospheric pressure than at low pressure. The expansion results in the decrease of electron temperature and electron number density. At atmospheric pressure air molecules also play a role in coupling of laser energy and the target material. This leads to increase in temperature and number density at atmospheric pressure. Also higher pressures result in reduced mean free path of the species involved, causing denser plasma with high temperatures. We have also studied the change in the intensity of the emission spectral lines and shift of the central peak due the influence of the ambient gas pressure.

The results we have obtained show a good comparison of the mass ablation rate in various metals by using three different wavelengths of Nd:YAG laser. Various parameters calculated can be used for the thin film setup employing pulsed laser deposition.

### 1.1.2 Scientific Publications Produced through PSF Supported Projects

One of the main achievements and usefulness of any research is the publication of its results in scientific journals. Based upon the results of completed projects, 30 research papers were published in different national and international journals. Details are at Annexure-IV.

### 1.1.3 Higher Degrees Earned through PSF Supported Projects

One of the major goals of the Foundation is the development of scientific human resource in the country. This results in strengthening of R&D infrastructure of various scientific organizations. The Foundation has been developing scientific manpower through its research projects and the Research Associates employed in the PSF supported research projects to register for higher degrees. Following students working on PSF supported research projects were awarded M.Sc. (Hons)/ M.Phil./Ph.D/degrees:

| S. No. | Project No. | Name of Researcher | Degree awarded |
|---|---|---|---|
| 1. | P-AU/Agr (242) | i. M. Naeem Sattar | M.Sc. (Hons.) |
| | | ii. Habib Ullah | M.Sc. (Hons.) |
| 2. | AJK-UCR/Agr (275) | Mr. Majid Mahmood Tahir | M.Sc. (Hons.) |
| 3. | P-AU/Agr (283) | i. Mr. Aamir Munir | M.Sc. (Hons.) |
| | | ii. Mr. Muhammad Irfan | M.Sc. (Hons.) |
| | | iii. Mr. Mahmood Usman | M.Sc. (Hons.) |
| | | iv. Mr. M. Shahid Nadeem | M.Sc. (Hons.) |
| | | v. Mr. Latif Ahmad | M.Sc. (Hons.) |
| | | vi. Mr. Imtiaz Ali | M.Sc. (Hons.) |
| | | vii. Mr. Farooq Ahmad Farooqi | M.Sc. (Hons.) |
| | | viii. Hafiz Abdul Latif Shahid | M.Sc. (Hons.) |
| | | ix. Mr. Muhammad Wasiq | M.Sc. (Hons.) |
| 4. | S-KU/Bio (244) | Ms. Mehrun Nisa | Ph.D |
| 5. | P-AU/Bio (246) | i. Mr. Syed Kashif Raza | M. Phil |
| | | ii. Mr. Mudassar Habib | M.Phil |
| | | iii.Mr. Aftab Ahmad Anjum | M.Phil & Ph. D |

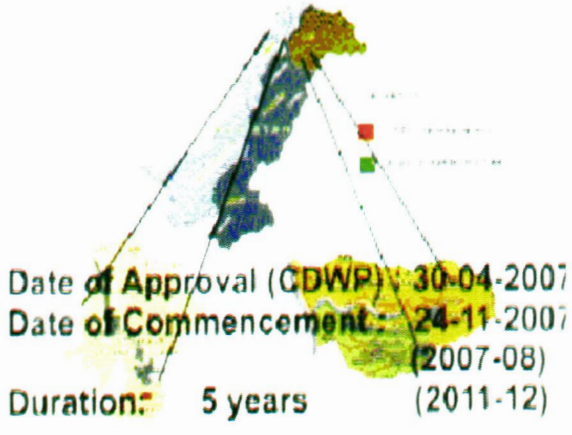
| | | | |
|---|---|---|---|
| | | iv.Mr. Atif Nisar Ahmad | Ph. D |
| 6. | P-AU/Bio (347) | Mr. Muhammad Irfan Anwar | Ph. D |
| 7. | Biotech/P-AU/Med (24/1) | i. Ghulam Nabi | M.Sc. (Hons.) |
| | | ii. Syed Farhat Abbas | M.Sc. (Hons.) |
| | | iii. Muhammad Umer | M.Sc. (Hons.) |
| | | iv. Ghulam Nizam-ul-Din | M.Sc. (Hons.) |
| 8. | Biotech/P-UAAR (220) | M. Zeeshan Hyder | Ph. D |
| 9. | C-QU/Chem (203) | Lubna Rasheed | Ph. D |
| 10. | US-NSF/C-QU/Phys (18) | i. M. Naeem Khan | Ph. D |
| | | ii. Sadaf Akbar | Ph. D |
| | | iii. Shakeel Akbar Marth | M.Phil |
| | | iv. Syed Rizwan Ali | M.Phil |
| | | v. Sobia Allah Rakkha | M.Phil |
| | | vi. Mohammad Atif | M.Phil |
| | | vii. M. Sultan Satti | M.Phil |
| | | viii. Samina Shah Zaman | M.Phil |
| | | ix. Shams-ur-Rehman | M.Phil |
| | | x. Wiqar Younus | M.Phil |
| | | xi. Mahwish Hasan | M.Phil |
| | | xii. Sher Afgan | M.Phil |
| 11. | C-QU/Phys (127) | i. Shaukat Mahmood | Ph. D |
| | | ii. Nek.M. Sheikh | Ph. D |
| | | iii. Sarwat Hafeez | Ph. D |
| | | iv. B. Rashid | Ph. D |

### 1.1.4 R & D Industry Programme:

The Foundation started R & D industry Programme in 2003 with the aim to establish linkages among academia, R&D organizations and industrial community to pave the way for achievement of socio-economic development in the country. Under the Programme, 16 projects were funded through non-development as well as development funds and specific progress is reported in relevant sections. However, the significant progress up-till now made from completed projects under this programme is highlighted below:

**1. Establishment of Pilot Green Tea Processing Plant:**

- Project sanctioned to National Tea Research Institute (NTRI), Pakistan Agriculture Research Council (PARC) at a total cost of Rs.3.15 million, has been successfully completed.
- Based on results of this project, a Mega PC-I was approved by CDWP for commercialization of Tea Industry in collaboration with Private Sector. Under that project, Rs.490.274 million are being provided by the Government of Pakistan and Rs.3.00 billion will be invested by the Private Sector.
- The mega project was initiated in April 2008 at Abbottabad. The successful completion of this project and commercialization of the processes developed will have an economic impact of Rs.16,000 million per annum and Pakistan will attain self sufficiency in tea.




**Pilot Green Tea Processing Plant**

**Fig.1:**Proposed site for tea plantation in AJ&K by Private Sector Investor

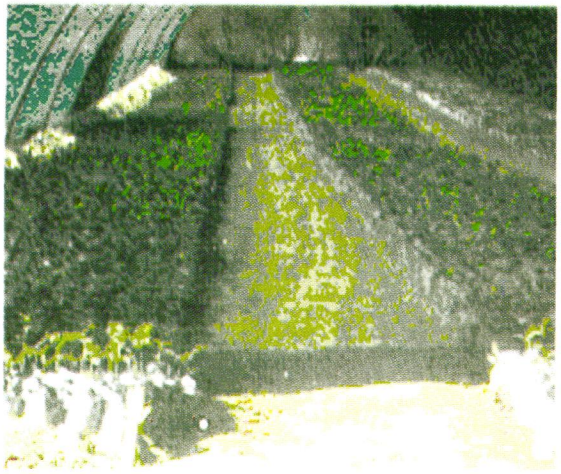


**Fig. 2&3:**Tea Nursery Structure at Abbasspur, AJ&K

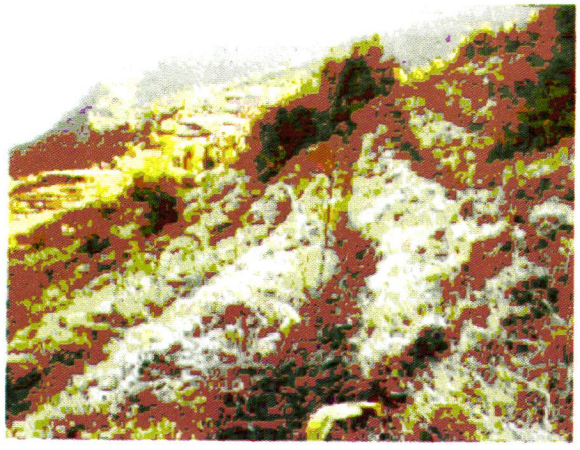


**Fig.4:**Tea Plantation in AJ&K by Investor

**Fig.5:**Wood lot Tea Nursery at AJ&K raised by Forest Department

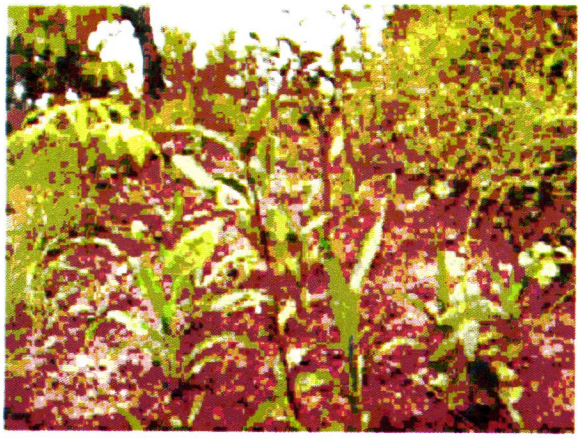


**Fig.6:**Tea Plantation on Farmer Field in AJ&K

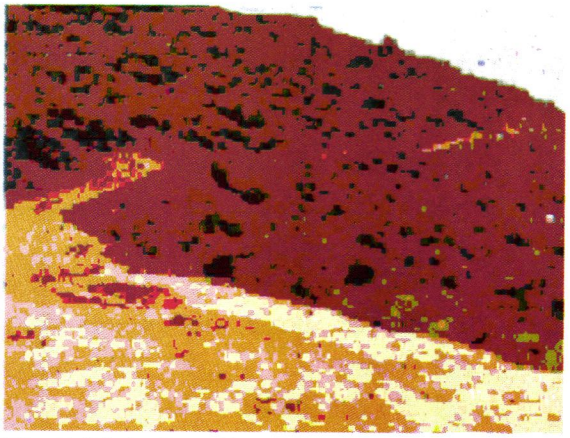


**Fig.7:**Link Road/Pathways Compartment (Tea Plantation in AJ&K)

**Fig.8:** Prospective Tea Cultivation Area in Mansehra

**Fig.9:** Tea Plantation on Farmer Field in Bajur FATA

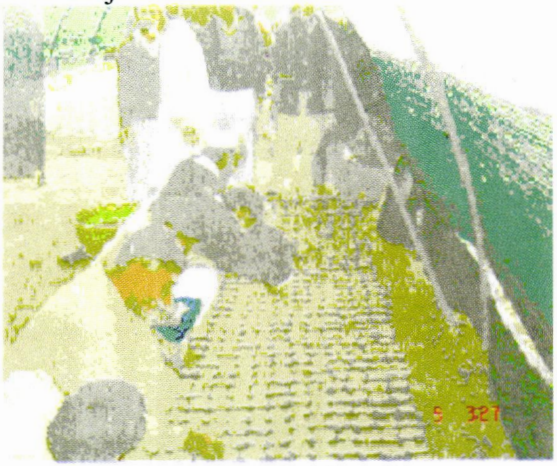


**Fig.10:** Extension Services are provided to the existing tea growers and new farmers in surrounding areas of the compartments allocated to the Private Sector.

## 2. Production of Iron and Steel from Kalabagh Iron Ore through Direct Reduction Process

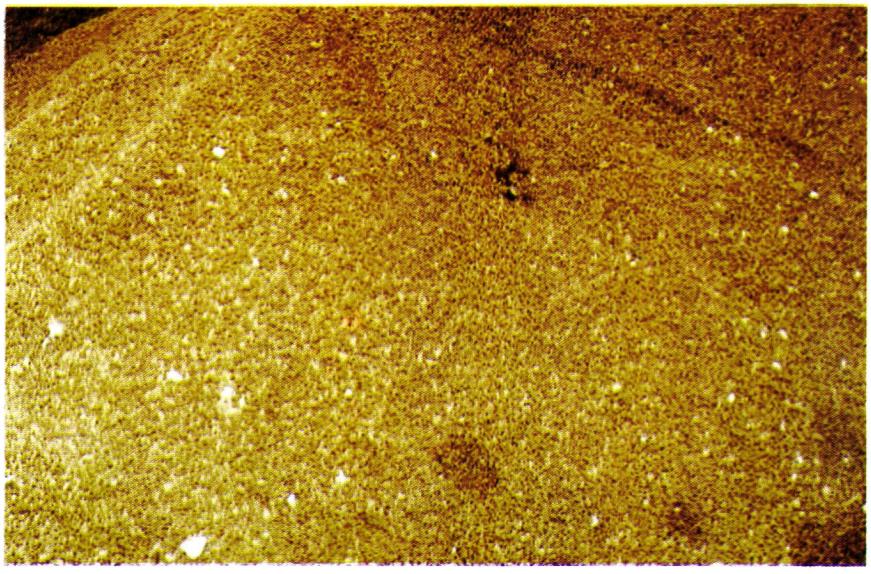
- The project was sanctioned by the Foundation to Pakistan Institute of Technology for Minerals & Advanced Engineering Materials, PCSIR Labs Complex, Lahore at a cost of Rs.1.628 million.

- At laboratory scale, the researchers have been able to develop a process that is capable of obtaining iron with 97-98 % purity. However, at the pilot plant scale, the grade and recovery of the iron concentrate produced were 60% and 70% respectively.

- Further research needs to be conducted to enhance the purity of iron to the level of 97-98%. The successful completion of the project and industrialization of the process will enable Pakistan to produce 3.4 million tons of iron and steel currently being imported by spending huge amount of foreign exchange.

## Raw Material

Kalabagh Iron Ore Samples



Crushed Ore Sample (4 #)

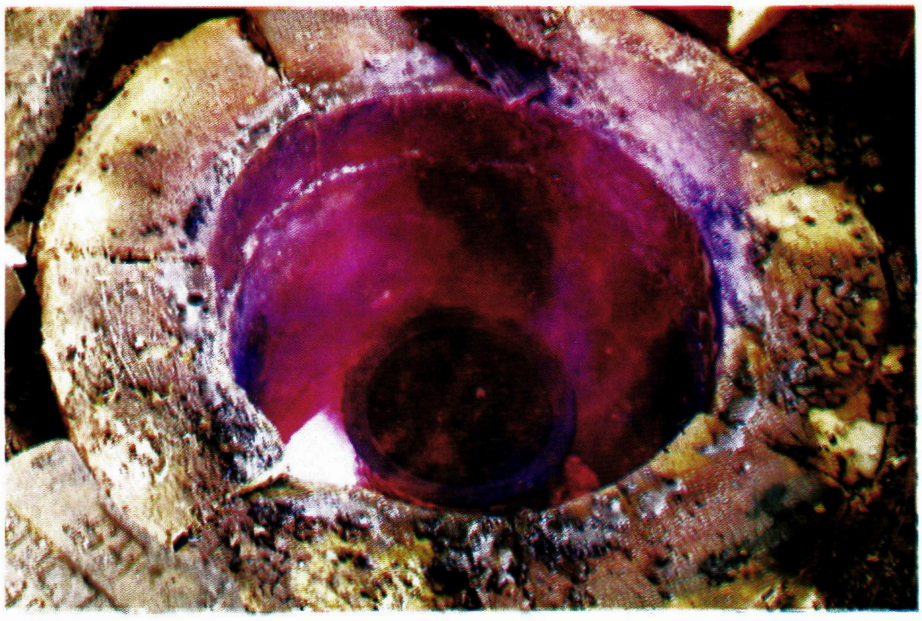
## Raw Material

Kalabagh Lime Stone Samples

Crushed Lime Stone Sample (4 #)

## Bench Scale Study

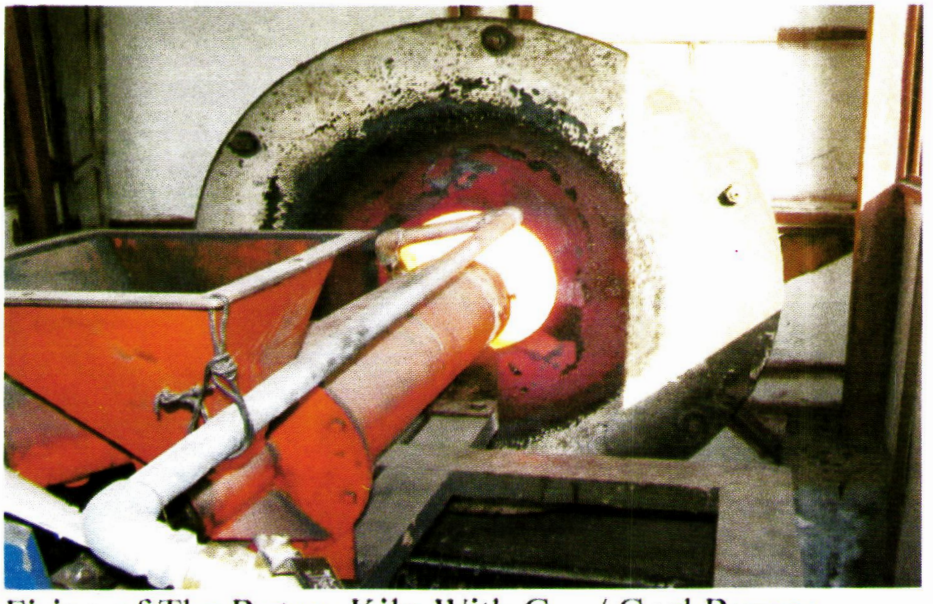
Mixed Raw Material in Crucible



Firing of Raw Material in Pit Furnace

## Pilot Plant Testing

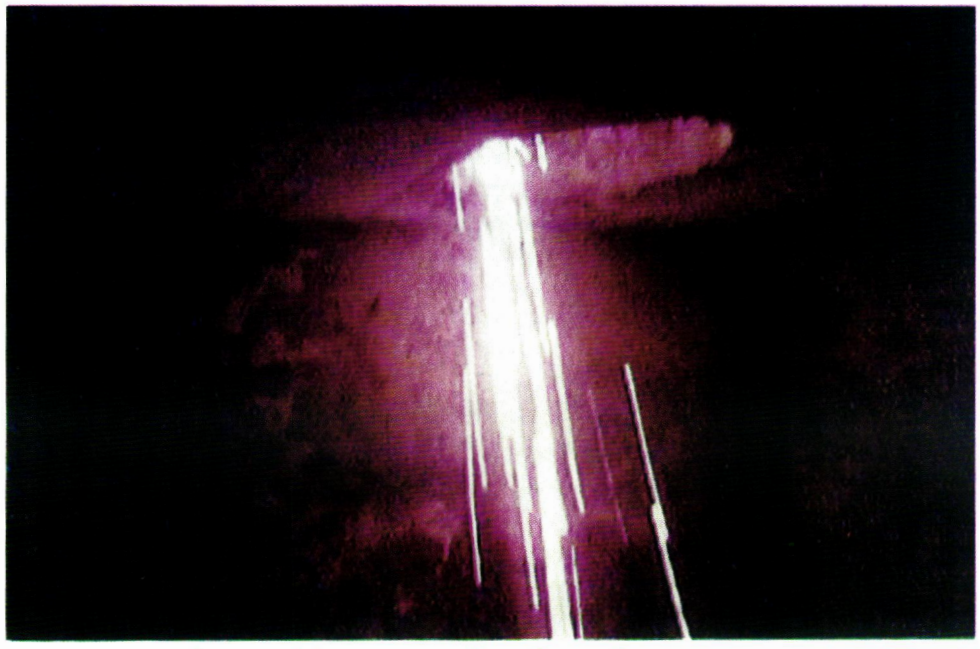
A View of the Rotary Kiln Used



Firing of The Rotary Kiln With Gas / Coal Burner

## Pilot Plant Testing

Falling of Luppens After Reduction



Another View of Luppens Produced

## Visit of Dignitaries

Dr. Shahzad Alam Head MSRC. briefing to caretaker minister of Science and Technology about the different products produced at project site

Engr. Shafique Anwar Principal Investigator. describing about the various products produced to Members of Senate Committee for Science and Technology at project site

## 3. Disbondment of Epoxy Coating and Integrity of Gas Transmission Pipelines

- The project was sanctioned by the Foundation to Institute of Chemical Engineering and Technology, University of the Punjab, Lahore at a total cost of Rs.3.68 million, but 50% cost was borne by the SSGC.
- The project has been successfully completed and the epoxy coating developed is being applied on pipelines on SSGC. Pak Air Force is to benefit as well, since the Ph.D. student belonged to PAF.
- The process that has been developed through the execution of this project and commercialization of the process has a potential economic impact of Rs.3000 million per annum.

### On-going Projects

During the current year, an amount of Rs. 450,000/- was released to an ongoing project entitled "Design and manufacturing of light weight composite reinforced CNG cylinder". The project history along with achievements is highlighted below:

- This project has been sanctioned by the Foundation to SUPARCO at a total cost of Rs.4.00 million. The project is currently underway.
- The requisite cylinders have been developed and subsequently the burst tests carried out. Further research work is in progress for their refinement and to make them cost effective.
- On completion and commercialization of the cylinders thus produced, the project may have an economic impact of Rs.900 million per annum.

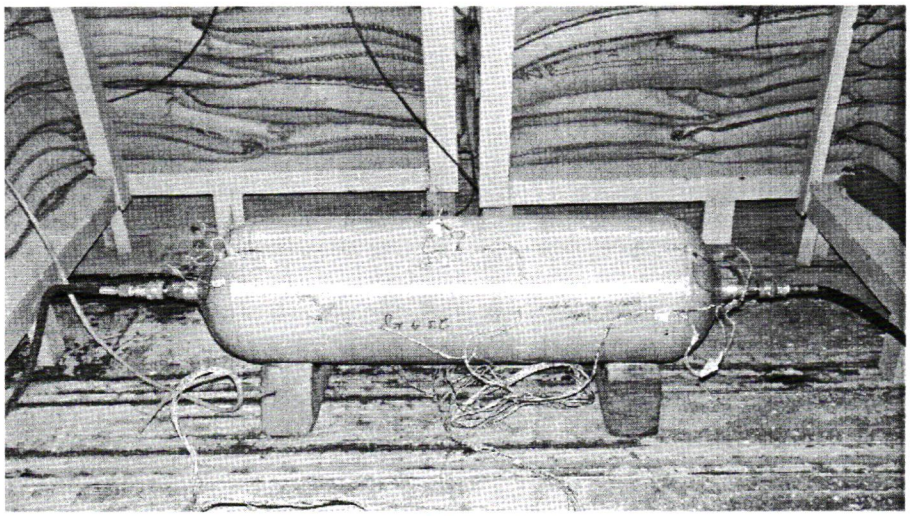


**Figure 1: Aluminum lined composite CNG cylinder** (*capacity 55 lit, OD=337.4 mm, L=1074.5 mm*) **ready for hydrostatic test with mounted strain gages.**

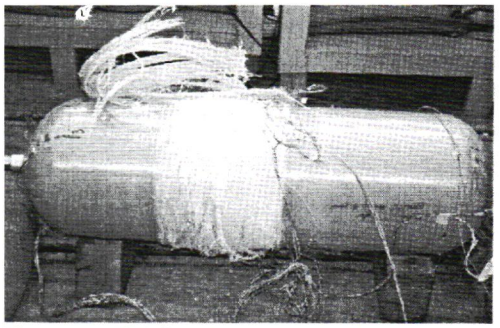


Figure 2 : CNG cylinder after burst test

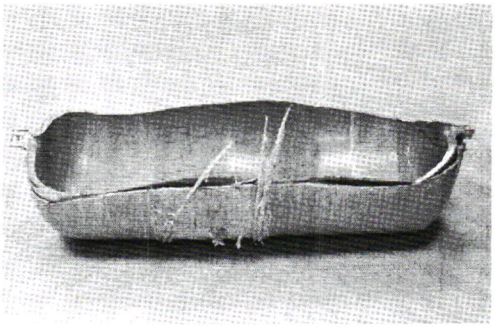


Figure 3: sectioned view of CNG cylinder after burst test

### 1.1.5 NATURAL SCIENCES LIKAGES PROGRAMME (NSLP) ENDOWMENT FUND:

In view of expanding trade of agricultural commodities between the two countries, the Commodity Credit Corporation of United States of America and Ministry of Finance, Government of Pakistan signed an agreement for establishment of Natural Sciences Linkages Programme (NLSP) under PL-480 scheme. Hence, the MoU between US Department of Agriculture, Foreign Agricultural Service and the Ministry of Science & Technology (MoST), Government of Pakistan was signed to create the Endowment Fund of US$ 10 million (in local currency) in PSF under the umbrella of MoST. The NSLP is governed by a Board of Governors, headed by the Minister for S&T, with members including secretaries of MoST, Ministry of Finance (MoF), Economics Affairs Division (EAD), Ministry of Food, Agriculture & Livestock (MINFAL), Chairman PSF, Chairman, PARC and Director, NIAB.

The primary goals of this programme are:

- To increase the contact and collaboration among different scientists working in the natural sciences and institutions of biological research, development and higher learning between the two nations.
- To provide opportunities some researcher & institution for the exchance of information, ideas, skills and techniques.
- To enhance the opportunities of collaboration in solving problems of common interest relating to natural sciences and
- To utilize special research and development facilities or opportunities available among the two countries.

### a. Under process Projects:

Forty seven proposals remained under active consideration of the Foundation. Out of these, 39 projects remained under-process. Out of which, 06 were approved by the Foundation at a total cost of Rs.16.015million **(Annexure-II-B)** and Rs.5.473 million were released on account of first installments of these approved projects.

### b. On-going Projects:

During the year, 08 projects were on-going and progress reports of 06 projects (semi-annual and 1st annual) were received. The PSF staff scrutinized the semi-annual reports, whereas the 1st annual report, after initial scrutiny, was sent for evaluation to the subject experts to assess the interim progress of the project. It may be mentioned here that due installments of on-going projects are released only if the interim progress of the projects at the end of each project year is found satisfactory. An amount of Rs.1.183 million was released on account of due installments and evaluation fee of ongoing projects. A list of the semi-annual and annual reports is given in **Annexure-III-B**.

## 1.2 SCIENCE PROMOTION

### 1.2.1 International Liaison

Liaison with international scientific organizations in different countries serves as a means to try and solve various scientific problems by sharing knowledge, exchange of expertise and by undertaking collaborative research projects. During the report period, 28 proposals of PSF, PASTIC & PMNH for S&T collaboration with China, Iraq, Libya, Tajikistan, Thailand, Switzerland, SAARC, Hungary, Canada, and European Commission were forwarded to MoST for consideration under various S&T protocols/Agreements/MoUs signed by the Government of Pakistan with those countries.

### 1.2.2 Activities Funded from Non Development Budget

**a. Institutional Support Grant Programme.**

A total of 06 requests were received during the year. Of theses, 04 were approved and an amount of Rs.699,752/- was released to 02 requests i.e., Rs.500,000/- to Bahauddin Zakariya University, Multan and Rs.199,752/- to IBGE, Islamabad for the purchase of equipments and chemicals to strengthen their laboratories for quality research.

**b. PSF Fellowship Programme.**

A number of M. Phil and Ph. D students applied for the PSF Fellowships to carry out their research at parent institutions. Four (04) could meet PSF criteria for the programme and were awarded fellowships to carry out their studies. Of these, 03 were M. Phil students from Quaid-i-Azam University, Islamabad and 01 Ph. D student from Sindh Agriculture University, Tandojam. An amount of Rs.258,000/- was released to these students on account of their fellowship.

**c. Financial Assistance for holding of Conferences, Seminars and Workshops:**

The Foundation provides partial financial assistance to scientific organizations for holding of scientific conferences, seminars and workshops. During the report period, an amount of Rs. 630,000/- was released to 13 organizations for holding of the conferences listed below.

| S. No | Title of Conference | Name of Organizer | Amount Released (Rs.) |
|---|---|---|---|
| 1. | International Conference on Emerging Technologies (IEEE-ICET-2008). From 18th -19thOctober 2008, at NUST Campus Rawalpindi | Prof. Dr. M. Yonus Javed College of Electrical & Mechanical Engineering NUST, Rawalpindi. | 50,000/- |
| 2. | **SC-Conf(176)/08** 1st Junior National Chemistry Symposium under the age of 35. From 19th -22nd October 2008, at City Campus University of AJK, Muzaffarabad, AJK. | Prof. Dr. Rehman Habib Principal Organizer Department of Chemistry University of AJK Muzaffarabad | 50,000/- |
| 3. | **SC-Conf(178)/08** CIIT Workshop on Research in Computing (CWRC) Fall-2008 Held on November 2008 at CS Deptt., CIIT Wah Cantt. | Muhammad Sharif Head of Deptt. (CS) CIIT, The Mall, Wah Cantt. | 50,000/- |
| 4. | **SC-Conf(181)/08** International Dairy Conference on Future Prospects of Dairy Production in Pakistan. From 3rd -4th November 2008 at Faculty of Animal Husbandry, University of Agriculture, Faisalabad. | Prof. Dr. M. Younus Dean Faculty of Animal Husbandry University of Agriculture Faisalabad | 50,000/- |
| 5. | **SC-Conf(187)/08** 1st International Conference on Energy & Environment Role of Energy Resources in Sustainability of Environment. From 26th -28th February 2009, at E&E Engineering Deptt, QUEST, Nawabshah. | Prof. Dr. Saleem Raza Samo, Head of Energy & Environment Engineering Deptt. Quaid-e-Awam University of Engineering, Sciences & Technology, Nawabshah | 50,000/- |
| 6. | **SC-Conf(188)/08** ASEAN Pakistan Conference on Materials Science (APCOMS 2008). From 15th - 16th December 2008 at NUST Campus, Islamabad. | Dr. Amir Azam Khan Professor School of Chemical & Materials Engineering, NUST, Islamabad | 50,000/- |
| | **SC-Conf(189)/08** | | |

| | | | |
|---|---|---|---|
| 7. | 11th International Symposium on Frontiers in Physics. From 29th -31st January 2009, at GC University, Lahore<br>**SC-Conf(190)/08** | Dr. G. Murtaza<br>Salam Chair in Physics<br>GC University<br>Lahore | 50,000/- |
| 8. | International Seminar on Introduction to Modern Pre cost Concrete Technology. Held on 13th January 2009 at NIT Building, SCEE, Islamabad<br>**SC-Conf(191)/08** | Dr. M. Nasrullah Khan<br>D.G, School of Civil & Environmental Engineering (SCEE), NUST, Islamabad | 50,000/- |
| 9. | 1st International Conference on Energy Environment & Sustainable Development (EESD 2009). From 4th -6th May 2009, at MUET Auditorium, Jamshoro<br>**SC-Conf(193)/09** | Dr. Khan Muhammad Brohi,<br>Director<br>Institute of Environmental Engineering & Management, MUET, Jamshoro | 50,000/- |
| 10. | International Symposium on Compatible with Climate Changes (ISCCC). From 27th - 29th March, 2009 at SALU, Khairpur, Sindh.<br>**SC-Conf(194)/09** | Prof. Dr. G. Raza Bhatti<br>Director<br>SALU Botanical Garden & Herbarium, Shah Abdul Latif University Khairpur | 50,000/- |
| 11. | International Conference on Aerospace Science & Engineering (ICASE-09). From 18th -20th August 2009, at IST Campus, Islamabad.<br>**SC-Conf(195)/09** | Mr. Imran Rahman<br>Vice Chancellor<br>Institute of Space & Technology, Islamabad | 50,000/- |
| 12. | Teacher training workshop lab. Method on Genetics. July/August, 2009 at Department of Animal Sciences, QAU, Islamabad.<br>**SC-Conf(196)/09** | Dr. Sajid Malik<br>Assistant Professor<br>Deptt. of Animal Sciences<br>Quaid-i-Azam University Islamabad | 30,000/- |

| | | | |
|---|---|---|---|
| 13. | Conference on Livestock Genomic. From 16th -17th June, 2009 at Conference Room, UVAS, Lahore.<br>**SC-Conf(197)/09** | Prof. Dr. Masroor Elhi Babar<br>Chairman<br>Deptt. of Molecular & Biotechnology<br>University of Veterinary & Animal Sciences, Lahore | 50,000/- |
| | | **Total:** | **630,000/-** |

## d. Support to Scientific Societies/Journals

The promotion of Scientific Societies/Associations, Learned Bodies and Academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular, is an important activity of the Foundation in addition to financial assistance for publication of Scientific Journals. The Foundation awards annual grants to the established Learned Bodies and Scientific Societies, as partial financial assistance for the achievement of their approved objectives and publication of their respective Scientific Journals. During the report period, Rs.2,476,216/- were granted to sixteen (16) Scientific Societies for their activities whereas Rs.185,000/- were released in favour of editors of four (04) Journals, for publication.

| | **Name of the Society** | **Amount of Grant** |
|---|---|---|
| 1. | Pakistan Physiological Society | Rs. 150,000/- |
| 2. | Horticultural Foundation of Pakistan | Rs. 150,000/- |
| 3. | Pakistan Society of Biochemistry & Molecular Biology | Rs. 200,000/- |
| 4. | Islamic Society of Statistical Sciences | Rs. 200,000/- |
| 5. | Pakistan Academy of Science | Rs. 100,000/- |
| 6. | Pakistan Mathematical Society | Rs. 126,216/- |
| 7. | The Chemical Society of Pakistan | Rs. 200,000/- |
| 8. | Weed Science Society of Pakistan | Rs. 150,000/- |
| 9. | Pakistan Society of Nematologists | Rs. 150,000/- |
| 10. | Pakistan Institute of Physics | Rs. 150,000/- |
| 11. | Pakistan Veterinary Medical Association | Rs. 150,000/- |

| | |
|---|---|
| 12. The Zoological Society of Pakistan | Rs. 200,000/- |
| 13. The Institute of Electrical & Electronics Engineers, Pakistan | Rs. 100,000/- |
| 14. Pakistan Botanical Society | Rs. 200,000/- |
| 15. Pakistan Association for the Advancement of Science | Rs. 100,000/- |
| 16. Agricultural Foundation of Pakistan | Rs. 150,000/- |
| **Total:** | **Rs. 2476,216/-** |

| Name of the Journal | Amount of Grant |
|---|---|
| 1. Pakistan Oral and Dental Journal | Rs. 50,000/- |
| 2. Pakistan Journal of Pharmaceutical Sciences | Rs. 50,000/- |
| 3. Pakistan Journal of Hydrocarbon Research | Rs. 35,000/- |
| 4. Farming Outlook | Rs. 50,000/- |
| **Total:** | **Rs. 185,000/-** |

### 1.2.3 Activities Funded from Development Budget

**1. On-going Development Project: "Participation of Scientists and Technologists in International Science Conferences, Seminars, Workshops and Trainings Abroad (Phase II)."**

The project is aimed at providing financial assistance to Pakistani scientists, technologists, doctors and engineers working in R&D organizations and educational institutions as well as Ph.D students for (i) Participation and presentation of research papers in international conferences, seminars & workshops abroad (ii) Attending short term (1-2 weeks) specialized training courses or obtaining training on specialized laboratory equipment in laboratories of the advanced countries and (iii) Undertaking a part of research work for which facilities are not available in Pakistan.

During the report period, there was an allocation of Rs.10.0 million under PSDP (2008-09). Travel Grants Award Committee in its meeting held on 2.08.2008 recommended 19 travel grants to scientists/technologists at a total cost of Rs. 3.037 million. Out of these, only 9 scientists attended international science conferences and presented their research papers and attended training courses. List of Scientists, who attended conferences / training courses, is

given at Annexure-V. Ten (10) scientists could not attend the conferences due to visa problems or other personal matters.

In September 2008, MoST reduced the PSDP allocation from Rs.10.0 million to Rs.2.0 million. Therefore, the project activity remained suspended for the later part of the year. Thus, 49 travel grant requests, received during 2008-09, were regretted due to the reduction in allocation and paucity of funds.

Out of the PSDP allocation of Rs. 2.0 million, an amount of Rs. 0.643 million was released by MoST in June 2009 which was utilized for payment of staff salaries and other miscellaneous expenses. An amount of Rs. 1.293 million could not be paid to nine scientists (who had attended the conferences) due to the non-release of travel grant component of the project. Release of balance amount of Rs. 0.0644 million to one scientist is still pending since June 2008.

**2. Ongoing development project "Automation of PSF Research Support Programme and other Activities"**

This project is aimed at automation of all the activities of the Foundation carried out under its science promotion and science popularization programmes. The objectives of the project are (I) the development of IT related infrastructure for establishment of Local Areas Network (LAN) and Wide Area Network (WAN), (ii) establishment of LAN within PSF to enable the officers to share information regarding research projects and other activities for quick and timely processing of requests, (iii) establishment of WAN between PSF, PMNH and PASTIC through COMSATS Internet Services for timely retrieval and quick flow of information between them, (iv) establishment of connection through Web to the outside world to facilitate the scientists/researchers to get in touch with the Foundation round the clock and get updated information regarding scientific activities supported by the Foundation and to submit online requests for research funding, institutional support, travel grant etc, and (v) the development of software for major activities of the Foundation including science promotional (research support, travel grant, institutional support etc) and science popularization (caravans, donations etc) programmes.

Under PSDP 2008-09, an amount of Rs.4.081 million was received for the period. During the report period, server room for management of Local Area Network (LAN), Wide Area

Network (WAN) and PSF Website was established. Furthermore, the contract for development of application software for PSF research support programme and other activities was awarded to the lowest qualified bidder, namely Sidat Hyder Morshad Ltd. The funds obtained were spent on the development of application software, payment of salaries to the project staff and purchase of certain miscellaneous items.

### 3. New PC-Is submitted to MoST

During the report period, the following PC-Is were submitted to MoST for consideration/approval

| Sr. No | Project Title | Project Duration | Project Cost Rs.(Million) | Date of Submission |
|---|---|---|---|---|
| 1. | Establishment of S & T Exhibition at Pakistan Monument Museum | 6-months | 36.046 | 01.01.2009 |
| 2. | Establishment of Five Science Centers in Different Cities of Pakistan | 3-years | 257.724 | 15.08.08 |
| 3. | Establishment of Science Clubs in 100 High Schools. | 3-years | 85.939 | 13.11.08 |

The PC-I of 5th project at Sr. No. 1 was sent to MoST for inclusion into the Agenda of Departmental Dvelopment Working Party (DDWP) meeting scheduled for 1st January 2009, whereas the same was not included in the revised Agenda of the DDWP meeting held on 1st January 2009. Recently MoST has been requested to consider the project for approval in its forthcoming meeting of DDWP.

PC-I at Sr. No.2 is under consideration of MoST since 15th August, 2008.

Sixty five copies of the PC-I for the project at Sr. No. 3 was sent to MoST on 31st March 2008 for consideration of Central Dvelopment Working Party (CDWP). MoST forwarded the PC-I to the Planning & Development Division with copy to Dy. Financial Advisor (S&T) on 22nd November for consideration in forthcoming meeting of CDWP. Later on, MoST invited information on prescribed format, required for FA's organization, on 13.01.2009. The requisite information was provided to MoST on 19.01.2009.

## 1.3 SCIENCE POPULARIZATION

Popularization and promotion of science, increasing its awareness in the society and development of scientific culture in the country are some of the major functions entrusted to Pakistan Science Foundation. Also, under the action plan of the National Science Policy-1984, the task of popularization of science at grass root level in the country was assigned to the Foundation. To achieve the aim of increased awareness of science, the Foundation is engaged in a number of activities, which are briefly described below:

**a. Science Caravan** is a Mobile Science Exhibition that has been designed to increase public awareness about science and to motivate the younger generation of the country towards study of science. The people living in rural/backward areas of the country are exposed to some of the most fascinating scientific and technical developments of the modern world through Science Caravans. Science Caravan vehicles transport display items like Panel Exhibits having photographs and write-ups, equipment like film projectors & VCRs for screening of documentaries and scientific films on large scale and Starlab Planetarium shows. Microscopes, computers, laser holograms and working models, reflecting various phenomena of physics, chemistry, mathematics and biology are also included in Caravan Exhibitions. At present, nine Science Caravan Units are in operation, two for each of the four provinces and one is stationed at Islamabad. During the report period, the PSF Science Caravans organized Caravan Exhibitions for more than 360 days and about 102,615 students of 320 schools visited these exhibitions as in the summary given below; Detail of the Science Caravan Exhibitions organized by all units is placed at **Annexure-VI.**

| S.# | Unit | No. of days | No. of schools | No. of students |
|---|---|---|---|---|
| 1. | Federal unit | 64 | 26 | 21,900 |
| 2. | Punjab unit | 63 | 83 | 21,890 |
| 3. | Sindh unit | 164 | 143 | 37,500 |
| 4. | NWFP unit | 62 | 59 | 16,300 |
| 5. | Balochistan unit | 7 | 9 | 5,025 |
| | **Total** | **360** | **320** | **102,615** |

## b. 18th Science Essay and Poster Competitions

Organizing Science Essay and Poster Competitions are regular and very successful activities of the Foundation. PSF in collaboration with all Boards of Intermediate & Secondary Education (BISEs) of the country organizes the Competitions between the students of high schools each year. So far, the Foundation has conducted eighteen (18) Essay and Poster contests, in which thousands of students participated from all over the country.

In the first phase, the Boards of Intermediate and Secondary Education arrange Science Essay and Poster Competitions within their jurisdiction on the theme allocated by the Foundation and submit the results of the Intra Board level to the Foundation. After receipt of the results from all Boards, PSF organizes "Inter Board Contest" (the final) at PSF Head Office, Islamabad each year. Judges consisting of professors, scientists and artists evaluate the essays and posters received from all over the country for best three positions (winner of the winners). To encourage the students, PSF awards merit certificates and cash prizes to the winner students. The amount of prize money for the best three students of Intra Board level is Rs.5,000/-, Rs.3,000/- & Rs.2,000/- and for Inter Board level is Rs.10,000/-, Rs.6,000/- and Rs.4,000/- respectively.

**18th Science Essay Competition** was organized during 2008-09, the theme of the year was "Energy Crises and its Possible Solutions". The essay competition was organized in three languages viz; English, Urdu and Sindhi. Hundreds of students participated in the competition from all Boards, out of them seventy one (71) students were selected as winners. Detail of the winner students of Intra Board Science Essay Contest is placed at **Annexure-VII.** Cash prizes were awarded to the winner students. Final contest (Inter Board) was organized by PSF at Islamabad. A panel of Judges consisting of the following, evaluated the essays for the best three positions in each language.

- Mr. Muhammad Hamid Chaudhary, Principal, IMCG, F-10/3.Islamabad.
- Dr. Muhammad Javed Iqbal, Chairman, Dept. of DNFCE, AIOU, Islamabad.
- Mr. Maqsood Ahmed Shaikh, Senior Scientific Officer, PSF, Islamabad.

List of the winners of 18th Inter Board level is given below:

| Name & School | Position | Prize Money |
|---|---|---|
| **English** | | |
| Maida Ali<br>Divisional Public School, Sargodha | 1st | Rs.10,000/- |
| Amna<br>Govt. Girls Model High School, G.O.R Colony, Hyderabad | 2nd | Rs.6,000/- |
| Asma Tasneem<br>F.G. Girls Model School, Model Town Humak (F.A), Islamabad | 3rd | Rs.4,000/- |
| **Urdu** | | |
| Memona Ikhlaq<br>WAPDA Girls High School, Shalimar Town, Lahore | 1st | Rs.10,000/- |
| Iqra Khanum<br>Govt. Girls High School, Nawabshah | 2nd | Rs.6,000/- |
| Mariya Siddqui<br>Faizia Inter College, Shaheen Camp, Peshawar | 3rd | Rs.4,000/- |
| **Sindhi** | | |
| Murk Aziz<br>Happy Home High School, Kotri | 1st | Rs.10,000/- |
| Ayesha Farooq<br>Metropolis Education System (Campus III), Karachi. | 2nd | Rs.6,000/- |
| Aqeela<br>Govt. Girls High School, Court Road Nawabshah | 3rd | Rs.4,000/- |

In total, an amount of Rs.307,000/- was paid to the winner students of Essay Competition.

**18th Science Poster Competition** was held on the theme "Global Warming and Climate Change". Fifty one (51) students were declared as winners of Intra Board level. Detail of the

winner students of Intra Board Science Poster Contest is placed at **Annexure-VIII**. Cash prizes were awarded to the winner students. Final contest (Inter Board) was organized by PSF at Islamabad. A panel of Judges consisting of the following evaluated the posters for the best three positions;

1. Dr. Manzoor H. Soomro, CSO, PSF, Islamabad
2. Ms. Mahmooda Ghazia, Director, PNCA, Islamabad
3. Mr. Rahat Saeed, Associate Artist, PMNH, Islamabad

List of the winners of Inter Board Science Poster Competition is given below;

| **Name & School** | **Position** | **Amount** |
|---|---|---|
| Junaid Ahmed<br>Govt. High School Bicket Gunj, Mardan | 1st | Rs.10000/- |
| Muhammad Ali<br>Govt. High school No.1, Shikarpur | 2nd | Rs.60000/- |
| Muhammad Ali<br>Al Imtiaz Academy,<br>Supply, Abbottabad | 3rd | Rs.4000/- |

Consolation prizes were also awarded to best ten posters. Detail is give at **Annexure-IV**. In total an amount of Rs.215,000/- was given to the winner students of Poster competition as prize money.

**c. PSF Science Model Competition: (A New Initiative)** Pakistan Science Foundation continuously enhances its Science Popularization activities with special focus on school / college students to attract and encourage them to adopt careers in science. This year, PSF has initiated a new program entitled "Science Model Competition" for the students of the whole country through 22 Boards of Intermediate and Secondary Education. Being the first program, the response from the Boards was not very enthusiastic. Only six Boards gave their consent to organize the Competition and four of them, namely BISE DG Khan, BISE Sukkur, BISE Abbottbad and BISE Mirpur (AJK) actually organized the Model Competition. Each Board was provided with a grant of Rs.25,000/- for organizing the competition. To encourage the students and teachers, cash prizes were awarded to the winner students; whereas, stipend was provided to the teachers who acted as the Mentors of the prize winner students. In total, a sum

of Rs.200,000/- was disbursed as prize money for the winner students, remuneration for the Mentors and grants to the Boards. Detailed list of the prize winners is placed at **Annexure-IX**.

**d. Donation of Popular Science Magazines and Scientific Books** is one of the regular and important activities of the Foundation. During the year 18,000 copies of Popular Science magazine "Monthly Global Science" were acquired and donated to 1500 schools. In addition, about 13,000 copies of scientific brochures were also distributed among the students. Ninety (90) copies of the Scientific Journal "The Fountain" published by The Light Publishing Turkey were purchased and provided to Caravan office, PASTIC office and PMNH. One hundred (100) copies of the book entitled *"Development of S&T in Pakistan and Muslim Ummah in the Light of its Cultural History and Temperament: Vol II Historical Analysis of S&T Decline and Interaction with Islamic Thought 2008"* by Dr. M.M. Qureshi and twenty (20) copies of the book *"Science, Education, and Development: Life and Work of M. Raziuddin Siddiqi"* by Dr. Anwar Dill were purchased for distribution among the universities of the country.

**e. Financial Assistance to S&T Organizations and Schools:**

PSF provides Financial Assistance to High Schools working in Govt. Sector, specially in rural areas for strengthening of their Science Laboratories. Furthermore, in addition to its own Science Popularization activities, PSF also helps other S&T organizations in organizing such activities. An amount of Rs.824,700/- was sanctioned to nineteen (19) schools and S&T organizations for strengthening of their labs and /or for arranging their Science Popularization activities. Detail of the schools and other organizations provided with financial assistance is placed at **Annexure-X**.

A sum of Rs.200,000/- was sanctioned to SOFTECH Society, FAST National University, Lahore for organizing **Software Competition "SOFTECH-2009"** in April 2009. Mr. Kashif Murtaza, Secretary, MoST was the Chief Guest on the closing ceremony and awarded the prizes, certificates and shields to the winners. The Foundation arranged its stall and Planetarium / Film Show during the event. The organizers of the Competition highlighted PSF activities during this national level competition.

**f. World Science Day for Peace and Development (WSDPD)** is an important event being celebrated regularly by PSF on 10th of November each year. WSDPD was declared by UNESCO in 2001 and since then the Foundation organizes Convention of Scientists and many other activities to commemorate the day. This year PMNH, PASTIC, Science Centre Faisalabad and all caravan units celebrated the WSDPD by organizing a number of programs on November 10, 2008.

As part of the WSDPD celebrations, the "Convention on Science for Peace and Development" was organized at Margala Hotel, Islamabad. About 300 students, teachers, educationists and scientists participated in the Convention. Dr. Ishfaq Ahmed, N.I., H.I., S.I. presided and Mr. Saifullah Khan Sherwanee, Secretary, MoST graced the occasion as Chief Guest. Dr. Syed Azhar Hasan, Chairman, PSF delivered welcome address. Dr. Mahmood-ul-Hassan Butt, V.C., A.I.O.U. and Dr. Shahzad Mufti, Advisor/Incharge, Biomedical Sciences, COMSATS Institute of Information Technology, Islamabad gave their talks on the theme of Science for peace and Development. Mr. Ichiro Miyazawa, Program Specialist (ED), UNESCO Islamabad read the message of the Secretary General, UNESCO. The most important element of the Convention was the speeches by the students who unfolded a number of dimensions for use of science for peace and development. Ms. Palwasha Faizan, Mr. Hussain Rasool, Ms. Mehreen Hasan, Ms. Reda Shahid, Mr. Mujtaba Ilyas and Ms. Kokab Malik (teacher) delivered their speeches. Prizes and souvenirs were awarded to the speakers. In addition, a live talk show on Radio Pakistan Islamabad's program *"Qadam Baqadam"* was also arranged, Dr. S. Azhar Hasan and Syed Ghulam Hasnain Bukhari, participated and highlighted the importance of the use of Science for peace and development.

**g. Visits and Trainings**

Ms. Asiya Nasir, Federal Parliamentary Secretary for Science & Technology alongwith other delegates visited Science Caravan Office and PASTIC Sub Centre, Quetta on 17th March 2009. The Acting Assistant Director/Incharge and staff welcomed and briefed the delegates about major activities of Science Caravans and PASTIC Sub centre. She was also briefed about the future plans of Pakistan Science Foundation regarding strengthening of Science Caravan and PASTIC Sub Centre. The Parliamentarian appreciated the Foundation's efforts for Popularization of Science and provision of scientific information to the research scholars

through PASTIC Sub Centre. She also appreciated the plan of establishment of Science Centre at Balochistan University of Information Technology & Management Sciences, Quetta for which two (2) acres land has already been earmarked by the University free of cost.

**Two days Training Program** for the Officers and Staff of Science Caravans and PASTIC Sub-Centres was organized on 8-9 June, 2009 at PSF. Caravan Incharges (Assistant Directors & Deputy Directors) and Science Assistants participated in the Training workshop. In addition, Incharges of all PASTIC Sub-Centres and other officers/staff from PASTIC also participated.

In his inaugural address, Dr. S. Azhar Hasan, Chairman, PSF emphasized on the importance of Science & Technology. He highlighted PSF initiatives for developing science culture in the country. Ms. Farhat Rajpar, Principal Scientific Officer / Organizing Secretary of the workshop welcomed the participants and briefed them about the activities of science popularization program. Ms. Nageen Ain-ud-Din, Director, PASTIC gave a brief introduction of the workshop. Dr. H.U. Khan, Director, National Commission on Biotechnology delivered his talk on Team Building, Positive Thinking & Attitude, Dynamic Leadership, Motivation, Time & Conflict Management. Malik Khalid Mahmood, Dy. Director (Admn), provided training to the caravan staff & officers about administrative rules, file handling and a number of other important issues/problems. Mr. Adnan Ahmed, Internal Audit Officer delivered his lecture on procurement in Govt. Sector organization. He provided valuable information about GST and Income Tax rules to be observed during procurement. Dr. Kh. Yaldram demonstrated the operation of newly acquired science models. He emphasized that during explaining any models to the students the basic principle working behind the model must be elaborated. New Models have been selected as per syllabus of the secondary school level on the themes like Apparent Weightlessness, Cloud Apparatus, Dew Point Apparatus, Gasoline Engine Model, Heart Model, Human Eye, Inertia Apparatus, Jensen Steam Engine, Magdem Board, Motor Generator, Physic on Ice, Re-magnetizer, Second Law of Motion Apparatus, Simple Machines Model, Siren Disk and The World's Simplest Motor. Six Sets of new Models (18 each) have been provided to Science Caravans and Science Centre, Faisalabad.

h. **Activities for Rehabilitation/Relief of Internally Displaced Persons (IDPs):** For the rehabilitation/relief of Internally Displaced Persons (IDPs) of Malakand, Swat, Buner, Dir etc., PSF carried out a number of activities. Science Caravan, NWFP unit and PASTIC Sub-Centre Peshawar have been actively working for the learners / students of IDPs camps. First Non-formal Education camp was arranged at Kacha Garhi, Peshawar (Camp #1 & 2) in collaboration with UNICEF. Second program was carried out in collaboration with International Rescue Committee (IRC) at Jalozai Camp, Nowshera. Third program of non-formal education centres was arranged at Benazir Complex, Nowshera. Science film and documentary shows on the themes including Human Brain, Eye, Heart, Ear, Digestive/ Circulatory/Nervous System, Rockets (Missiles), Gravity and Solar System, were also arranged. In addition, computer training and basic concepts of Physics, Chemistry, Math and Biology were also explained to the learners/students through simple computer programs. More than 2500 learners of IDPs Camps benefited from the PSF Non-formal Education Camps.

Need assessment of the learners was carried out and on the basis of the assessment 1000 sets of notebooks, Ball pens, Lead Pencils with Erasers and Sharpeners were provided to the learners of IDPs camps of Mardan.

The above mentioned programs were also carried out for the learners of Palosa Camp Charsada, Shaikh Yasin Camp Mardan, Shaikh Shahzad Camp Mardan, Jalala Camp Mardan, Mazdorabad Camp Mardan, Shah Mansoor Camp Swabi and Anbar Camp Swabi.

i. **Renovation of Science Centre, Faisalabad:** Renovation and repair work of Science Centre, Faisalabad is ongoing. Background painting and foreground of Natural History Diorama of main hall was prepared. Stuffed animals and exhibits regarding flora and fauna were also installed. Natural History Corner was completed. Renovation of show cases for display of scientific models in Physical Hall is about to complete. 18 new scientific models have been added in the Physical sciences hall. Solar lights, fountain and panels are being repaired/renovated. Position of the *Ghuori* missile is also being changed.

## j. Future Plans

- Strengthening of Science Caravans
- Strengthening of Science Centre, Faisalabad
- Establishment of 15 Science Centres
- Distribution of Science Posters and Books among 3000 schools
- Establishment of Media Cell
- Organizing International Exhibition on Environment in Pakistan (in collaboration with French Embassy, Pakistan/UNESCO)
- Establishment of Science Clubs in High schools
- Training of Science Popularization staff/officers
- S&T Expo/Fair


*Group Photo of Students during Science Caravan Exhibition*


*Demonstration of Gyroscopic Forces at Science Caravan Exhibition*

*Students are being briefed about Four Stroke Engine Model*

*Students taking keen interest in Science Caravan Exhibition*

*Students are being briefed about the Panels and Models of Science Caravan*

*Inside view of starlab system students are showing keen interest in the Planetarium show*

*A view of PSF Science Model Competition*

*Students with their Models prepared*


*Dr. Shehzad A. Mufti addressing the audience at "Convention of Scientists" November 10, 2008*

*Participants of World Science Day for Peace & Development November 10, 2008*

*Judges are evaluating the posters for Inter Board Science Poster Competition*

*Group Photo of the Judges of Inter Board Science Poster Competion*

*Dr. Khuwaja Yaldram, Technical Expert, PSF is delivering his lecture to the staff of Science Caravans during Training workshop*

*Ms. Farhat Rajpar, PSO delivering her talk for Science Caravan Staff during Training workshop*

# 2. PAKISTAN MUSEUM OF NATURAL HISTORY

The statutory functions of Pakistan Museum of Natural History include research on the natural resources of the country like flora, fauna, geology, mineralogy, etc. besides public education on these aspects. PMNH has four Divisions, namely Botanical Sciences, Earth Sciences, Zoological Sciences Divisions and Public Services Division. The first three Divisions are mainly engaged in research activities while the fourth carries out development of display exhibits and arranges activities pertaining to public education. Keeping in view its statutory functions, the scientific and technical staff of PMNH remains busy carrying out various national and international collaborative research projects with various national and international institutions and agencies. The results of research work are published in the form of books and research articles in reputed national and international journals. The PMNH display centre depicts the natural history of Pakistan in the form of 3-dimensional dioramas, computerized exhibits and animated exhibits. The display centre is the prime source of informal public education on the natural resources of the country and thousands of visitor's benifit through it. As part of educational activities, PMNH scientists arrange various workshops and training programmes for the students and teachers of educational institutions. The details of the activities carried out during the year are as follows.

## 2.1. EVENTS ORGANIZED:

### 2.1.1 Workshop on Sharing Biodiversity Data

Pakistan Museum of Natural History organized a training workshop on "Sharing Biodiversity Data on Internet" on 21st July, 2008 as part of Global Biodiversity Information Facility (GBIF) Node Mentoring Project. Dr. N.M. Butt, Chairman PSF was the chief guest at inaugural and closing sessions. Fifty-five participants from the potential organizations having biodiversity collection and end users attended this one-day training workshop.

### 2.1.2 Celebrations of World Science Day

PMNH arranged week long activities on its premises to celebrate the "World Science Day for Peace and Development" from November 10-16, 2008. An exhibition of natural history photographs donated by the British Council was arranged in the display centre. The exhibition was inaugurated by Dr. S. Azhar Hasan, Chairman, PSF on November 10, 2008. PMNH

waived off entry ticket for general public for the whole week so that maximum visitors could benefit from this facility. The PMNH display galleries, including newly constructed animated exhibits and Planetarium Show remained open for public viewing from 0900 hours to 1600 hours daily throughout the week.

### 2.1.3 Children Art Competition

PMNH in collaboration with Intel Pakistan organized a drawing and poster competition on Environment among school children on its premises in connection with celebrations of National Year of Environment 2009 on 7th April as a part of its informal educational activities. Some 74 students between 9 to 15 years of age from different educational institutions of the twin cities participated in the competition.

PMNH displayed the artworks of the children for public viewing at its temporary exhibits gallery. The inaugural ceremony of the drawings and paintings of the competition and prize distribution ceremony was held on 15th June, 2009. The chief guest, Mr. Asif Shuja Khan, Director General, Pakistan Environment Protection Agency (Pak-EPA) inaugurated the exhibition. Cash prizes and certificates were awarded to the winners of the competition. Iman Shahid obtained the first prize (Rs 5,000), the second prize of Rs. 3000 went to Rafia Khan; while Khwaja Arsalan Rasheed received the third prize (Rs 2,000). In addition to cash prizes, the top three position-holders were also given special gifts. Consolation and special prizes comprising gift hampers were also distributed.

### 2.1.4 Workshop on Environment

PMNH, as a part of its educational activities and celebrations of National Year of Environment 2009, arranged a two-day workshop on "Environment Protection and Conservation of Natural Resources" at its Audio-Visual Centre on June 9-10, 2009 Some 30 teachers from public and private sector educational institutions participated in the workshop aimed at training to teachers to take initiatives for environment protection and conservation of the natural resources of the country. The workshop was inaugurated by Dr Syed Azhar Hasan, Chairman, PSF. The inaugural ceremony of the workshop was followed by three technical sessions comprising lectures delivered by scientists from the geological, botanical and zoological sciences divisions on harmful effects of mining, industrial and urban pollution,

over-exploitation of natural resources, etc. A field trip to the Margalla Hills National Park was organized on the second day in which the teachers were briefed about field techniques on the study of biodiversity. The participants were provided on the spot information by the PMNH resource persons on threats to biodiversity like forest fire, soil erosion, hunting, pollution, urban expansion, stone crushers in Margalla Hills, etc. The Concluding Ceremony was graced by Dr. S. Taseer Hussain, Professor at Howard University, USA, and former DG, PMNH, and Dr. S. Azhar Hasan, Chairman, PSF. The participants of the workshop were awarded certificates.

## 2.2. VISITS TO PMNH

### 2.2.1 Visit of Minister for Science & Technology

The Federal Minister for Science and Technology, Mr. Muhammad Azam Khan Swati paid a visit to Pakistan Museum of Natural History on 24th February, 2009. Mr. M. Kashif Murtaza, Federal Secretary, MoST accompanied the Minister. Dr. S. Azhar Hasan, Chairman, Pakistan Science Foundation, gave a presentation on the functions and activities of PSF for the promotion of S&T in the country. Dr. S. Shahid Hussain, ex-Director General, PMNH gave a presentation about statutory functions of PMNH, its ongoing research, public education and future plans.

The Minister along with the Secretary visited various display galleries of the Museum and appreciated the efforts of PMNH staff for displaying the natural history of Pakistan through three dimensional dioramas and electromechanical exhibits for public education and research purposes. He remarked that the natural history specimen collection and their displays were very impressive and of immense value for research and education. The guests also visited the PMNH research laboratories and repositories. They assured PSF and PMNH of their complete support for provision of funds to complete the remaining blocks of the PMNH building.

### 2.2.2 Visit of Secretary, Ministry of Education

Mr. Abdul Rauf Chaudhry, Federal Secretary, Ministry of Education (MoE), visited PMNH on March 21, 2009. After a brief presentation by the Director General, a discussion held on the ways and means to promote formal as well as informal education in the country and to use the PMNH as a source of education. The Federal Secretary inaugurated the recently

refurbished PMNH Library by cutting a ribbon. The Library contains more than 5,000 books, 3,000 journals and a large number of PMNH research publications. The guest visited various display galleries of the Museum and appreciated the efforts of PMNH towards public education and research. He assured support for PMNH educational activities.

### 2.2.3 Visit of Chinese Ambassador's wife to PMNH

Mrs Lou Zhaohui, the wife of Chinese Ambassador to Pakistan, visited the PMNH along with a group, comprising Chinese students and officials of the Embassy of People's Republic of China on November 1, 2008. Dr. S. Shahid Hussain, Director General, PMNH and senior officials of the museum received the guests and briefed them about the PMNH functions and responsibilities. The guests visited different galleries of the museum and appreciated the displays, which are playing an important role in public education and natural history research activities. The Director General, PMNH presented a set of PMNH publications and posters to the guests. The Chinese guests also presented a souvenir of Olympics 2008 Mascots to the PMNH. A member of the group while writing his comments in the visitors' book said: "Pakistan is a country with rich natural resources. Both China and Pakistan should deepen their cooperation in Science and Technology".

### 2.2.4 Visit of French Attache for Science and Technology to PMNH

Engr. Sandie Favier, French Attache for Science and Technology, visited PMNH on 19$^{th}$ May, 2009 and discussed various scientific exchange programmes for improving research on natural history. She invited the Pakistani scientists on short visits to France and for Ph.D. programmes to learn new techniques and to strengthen their own technology in the field of natural history. Dr. S. Azhar Hasan, Chairman, PSF, and Dr. Manzoor H. Soomro, Director General, PMNH gave a brief introduction of the role of PMNH in terms of recreation, information and education to the people in general and students in particular. They expressed the hope that PMNH-France collaboration would open new vistas in the field of science and technology, while the interaction of the scientists from both the sides would strengthen the science institutions in Pakistan and France.

## 2.3. FIELD WORK:

PMNH geologists carried fieldwork in various locations in Balochistan and the Salt Range for stratigraphic, paleontological, petrological and structural studies and collection of rock,

mineral and fossil sample for the PMNH repository, research and display. Some 255 samples of rocks, minerals and fossils were collected.

Botanists of PMNH carried out field work in different localities of Muzaffarabad, Bahawalpur, Potwar plateau, the Galiat, Sialkot, Lahore, Multan, upper Kaghan valley, Northern Areas, Mangla Dam area and Islamabad. They collected some 2200 plant samples along with field data and photographs.

The Zoologists of PMNH carried out field work in localities of Gawader, Sukkur, Thatta, Badin, Runn of Kuchh, NagarParkar, Hub Dam, Bahawalpur, Cholistan Desert, Mangla Dam, Kaghan valley, Neelum valley and Northern Areas. About 5000 animal samples were collected during these field trips.

## 2.4. LABORATORY WORK:

- Syntheses of the geochemical data of the mafic-ultramafic rocks were carried out.
- Various discrimination diagrams for the major and trace elements data to determine geological paleo-environment were plotted.
- Sediments for small mammal fossil recovery were washed.
- Variety of laboratory studies including microscopic identification of minerals and fossils and sieve analysis of various rock/sediment samples were carried out.
- 850 specimens of higher plants of PMNH Herbarium were identified.
- 3000 specimens of higher plants of PMNH Herbarium were sysmatically arranged.
- 1100 specimens of lower plants were identified.
- The lizard species *Cyrtopodion dehakroense* sp. nov. collected from Dehakro II wetland complex Dist. Nawabshah was discoveredas new species.
- 2400 fish specimens collected from different wetland areas of Pakistan were identified and catalogued.
- Three crocodiles for PMNH display received as donation from CDA Zoo were stuffed.
- 30 species of wasps (belonging to family Vespidae) were identified.
- 2320 insect specimens belonging to different insect orders were catalogued.
- Morphometric measurements and pholidosis data of *Cyrtopodion* species collected from Diamer Basha Dam were taken.
- 30 specimens of benthic macroinvertebrates were identified.
- Skeletons of one Blue Bull and one Lion were prepared and preserved.

- A dead Lioness specimen (donated by Lohi Bhare Wildlife Park, Rawalpindi) and Black Buck (donated by CDA Zoo, Islamabad) were skinned.

## 2.5. RESEARCH PUBLICATIONS:

- **Baig K. J.** & **Masroor, R.** 2008. The snake of genus *Spalerosophis* Jan. 1865 in Indo-Pakistan and Iran. *Herpetozoa*, **20(3/4)**: 109-115.
- **Baig, K. J., Masroor, R**. and Arshad, M. 2008. Biodiversity and Ecology of the Herpetofauna of Cholistan desert, Pakistan. *Russian Journ. Herpetology*. **15(3)**:193-205.
- **Feroze, A.** and S. A. Malik. 2008. Some pharmacological properties and LD-50 of saw scaled viper of Pakistan. *International Journal of Pharmacology*. **21(3).**
- Daud M. K., Yuqiang, S., Dawood M., Yu-xiang, W., Hayat, Y., Raziuddin, **Mishkatullah**, Salahuddin, Najeeb Ullah, Murali, T.V. & Shui-jin, Z.. **2009**. Cadmium induced functional and ultrastructural alterations in roots of two transgenic cotton cultivars. *Journal of Hazardous Materials*. **161 (1)**: 463-473.
- Fritz, Uwe; Auer, Markus; Chirikova, M. A., Duysebayeva, T.N., Eremchenko, V. K. Gholi, K.H.; Kashkarov, R. D.; **Masroor, R.**, Moodley, Y., Pindrani, A., Široký, P, Hundsdörfer, A.K. **2009.** Mitochondrial diversity of the widespread Central Asian steppe tortoise (*Testudo horsfieldii* Gray, 1844): implications for taxonomy and relocation of confiscated tortoises. *Amphibia-Reptilia*, **30(2)**: 245-257.
- **Rafique, M.** and **M. Asif.** 2008. Record of great gerbil, *Rhombomys opimus*, from Naukundi, Balohistan with comments on extension of its distribution range in Pakistan. *Pakistan Journal of Zoology*, **40(5)**: 387-388.
- Masroor, R. 2008. A new species of *Cyrtopodium* (Sauria: Gekkonidae) from the northern areas of Pakistan. *Zootaxa*. **1875**:33-43.
- Bouilhol P., Burg, J.-P., Bodinier, J.-L., Schmidt, M. W., **Dawood H.,** & **Hussain, S. S.,** 2009. Magma and fluid percolation in arc to fore-arc mantle: Evidence from Sapat (Kohistan, Northern Pakistan). *Lithos*, **107**: 17-37.
- Hussain, A., **Leghari, M.K.** & Munir, M. 2008. Qualitative and quantitative distribution of algal species from paddy fields of Sharaqpur and Kamalia, Punjab. *International Journal of Phycology and Phycochemistry*, Karachi. **4(2)**: 149-158.
- Ashraf. M., **Leghari, M.K.** & Murtaza, G. 2008. Seasonal succession of algal species from Hajira and its adjoining areas, district Poonch, Azad Kashmir. Ibid. **4(2)**: 179-184.
- **Munir, S.**, Valeem, E.E. & Qureshi, R.R. 2008. Limnological study of Salgrah stream, Murree, Punjab. Ibid. **4(2)**: 191-196.
- **Munir, S.**, Valeem, E.E. & Leghari, M.K. 2008. Preliminary studies on algal flora of Wah Mughal Garden, district Attock, Pakistan. Ibid. **4(2)**: 211-220.

## 2.6. TECHNICAL REPORTS:

Submitted the following technical reports:

- Study of small mammals in cotton fields to evaluate Better Management Practices (BMP) in Sukkur and Bahawalpur.
- A Preliminary Assessment of Benthic Macro-invertebrate Fauna of Neelum River: A Pre-impoundment study for the Impact Assessment of Kishanganga Dam on Neelum River.
- Baseline studies on aquatic invertebrates of Lake Saif-ul-Muluk, District Mansehra.
- Baseline studies on aquatic invertebrates of Lake Lulusar, District Mansehra.
- Baseline studies on aquatic invertebrates of Lake Kukush, District Ghizer.

## 2.7. DEVELOPMENT PROJECT COMPLETED

The PMNH development project entitled "Completion of Block-II and Strengthening of Research and Display Activities of Pakistan Museum of Natural History, Islamabad" was completed.

## 2.8. INTERNATIONAL COLLABORATIVE RESEARCH PROJECTS:

**Completed**

*The early evolutionary stages of an island arc: the dunite-pyroxenite-gabbro association of Sapat, Kohistan, NE Pakistan* (2005 – 2008): Swiss Federal Institute of Technology; Montpellier University, France and Pakistan Museum of Natural History.

**On-going**

*Early Triassic Biostratigraphy and Carbon Isotope Stratigraphy of the Salt Ranges.* Institute and Museum of Palaeontology of the University of Zurich (PIMUZ), Switzerland, and the Pakistan Museum of Natural History.

## 2.9. NATIONAL COLLABORATIVE PROJECTS:

- *Indus for All Programme* In collaboration with WWF, UNDP, Netherlands Embassy, JEF, Poverty Alleviation Programme.
- *Biodiversity of Wetlands of Pakistan.* In collaboration with Pakistan Wetland Programme.
- *Environmental Impact Assessment in Best Management Practices Cotton fields at Sukkur, Ghotki and Bahawalpur.* In collaboration with Pakistan Sustainable Cotton Initiatives and World Wide Fund for Nature Pakistan.

- *Biodiversity and conservation biology of bats in some selected protected areas of Pakistan.* In collaboration with University of Veterinary & Animals Sciences, Lahore.

## 2.10. NATIONAL RESEARCH PROJECTS:

**On-going PSF-funded research projects:**

1. *Studies on algae of major rivers of Punjab (Pakistan) with special emphasis on its consumption by economically important fishes.*
2. *Taxonomic and Ethnobotanical studies of Economically Important Plants of Potwar plateau and the Galiat with reference to their trade.*
3. *Sedimentological and depositional environment of Datta Formation in Western Salt Range of Potwar sub-basin.*
4. *Biostratigraphic Zonation of Lockhart Limestone of Paleocene age in Nilawahan and Kalrawahan Areas of Central Salt Range, Pakistan*

## 2.11. DESIGN AND DISPLAY:

- Designed poster and brochure on significance of environment
- Landscaping of both side of VOG is completed.
- Construction of Wetlands Diorama is in progress in collaboration with Pakistan Wetlands Programmme.
- Provided photography and videography services to PMNH and PSF for various seminars, conferences, workshops and other functions.
- Maintained hardware/software for Virtual Orientation Gallery (VOG) of PMNH Display Centre and updated information in the gallery.
- Provided and maintained Internet facility to PNMH for the report period
- Carried out general maintenance of display galleries, Audio-Visual Centre and PMNH building.

## 2.12. GUIDED TOUR OF PMNH/EDUCATIONAL ACTIVITIES:

- The number of visitors to PMNH from July 2008 to June 2009 stood at 24,569 people including 14,999 students and teachers, 9,464 general visitors and 106 foreigners.
- Guided tours were arranged for a large number of student groups and eminent visitors.
- Arranged lectures/film shows in PMNH for students of various Schools, Colleges and Universities.

## 2.13. SERVICES RENDERED TO OTHER ORGANIZATIONS:

- Dr. S. Shahid Hussain, Director, ESD, attended a meeting of the Board of Studies in Geology at the Institute of Geology, Punjab University, Lahore. A number of research and educational activities of the Institute were discussed and approved.
- Dr. M.K. Leghari, Acting Director, BSD, conducted viva voce of 4 M. Phil. students of Quiad-i-Azam University and Kohat University of Science & Technology. He also guided two Ph. D. and one M. Phil. students of PMAS Arid Agriculture University, Rawalpindi, and COMSATS Institute of Information Technology, Abbottabad.
- Dr. Saleem Ahmad,Curator, BSD conducted viva-voce of 4 M. Phil. students of Department of Plant Sciences and Department of Biological Sciences, Quaid-i-Azam University, Islamabad. He provided expert guidance to 5 students of University of Azad Jammu and Kashmir, Muzaffarabad.
- Mr. Ahsan Feroz, R. A., ZSD, served as Inspector for evaluation of students research project Intel® workshop held in January 2009.
- The public services division of PMNH designed and prepared S & T Float for Pakistan Day Parade, 2009.
- Renovation work of Natural History and Physical Sciences sections of Faisalabad Science Centre was carried out.
- Provided record of visitors to PMNH Display Centre to the Ministry of Tourism for compiling their annual report about tourism promotion in the country.

## 2.14. MEETINGS/ CONFERENCES/TRAININGS/ WORKSHOPS ATTENDED:

- Dr. M. Rafique of ZSD presented annual report of Pakistan-GBIF Node at Annual meeting of Node Managers of GBIF at Tanzania (Africa) from 30$^{th}$ October-7$^{th}$ November, 2008
- Dr. K. Mahmood of ZSD attended meeting of Node Managers Committee, GBIF, held in Amsterdam, 14-15$^{th}$ October 2008.
- R. Masroor participated in "Pakistan-US Science and Technology Conference" Islamabad from 25$^{th}$ –28$^{th}$ August, 2008.
- R. Masroor presented a report on "Herpetofauna of Pakistan: Issues, Threats and Future Paradigms" at "Jahrestagung Deutschen Gesellschaft fur Herpetogie und Terranienkunde (DGHT) e.V." Potsdam-Germany during 3$^{rd}$-7$^{th}$ September 2008.
- M.Ullah attended training Course for Conservation Officers on Cardiopulmonary Resuscitation, on 2$^{nd}$-14$^{th}$ October, 2008, at Pakistan Wetland Programme, Islamabad.

- M. Abbas and M.Ullah attended a lecture entitled "Type Concept in Insect Systematics" delivered by Dr. Muhammad Imtiaz on 4th March, 2009 at National Insect Museum, National Agricultural Research Centre, Islamabad.

## 2.15. LECTURES DELIVERED:

- Dr. M. Rafique delivered lecture entitled "Faunal diversity of wetlands in Northern Areas: Potential, Threats & Recommendations for Future Conservation & Management" on World Wetland Day in connection with celebrations of National Year of Environment. The event was jointly organized by Ministry of Environment, Pakistan Wetland Programme and Tourism Development Co-operation of Pakistan on 26th February, 2009 at Gilgit.
- Dr. M.K. Leghari, Dr. Nayyer Iqbal, Dr. Saleem Ahmad, Khalil ur Rehman, Mishkatullah delivered lectures on various topics on the Flora, Fauna and Geology of Pakistan under the PMNH in-house lecture series.

## 2.16. HIGHER STUDIES:

Mr. S. Aneel A. Gilani, Research Associate, BSD, rejoined PMNH on 14th March, 2009 after availing one-year study leave for Ph. D. at Quaid-i-Azam University. Part of his research was undertaken by him at University of California, Davis, USA and supervised by Prof. Dr. Daniel Potter. He studied the phylogeny, palynology and taxonomy of the genus *Prunus* (family Rosaceae).

*Visit of Mr. Muhammad Azam Khan Swati, Federal Minister for Science and Technology to Pakistan Museum of Natural History (PMNH) on 24th February, 2009*

*Federal Secretary, Ministry of Education, visited Pakistan PMNH on March 21, 2009*

*Children Art Competition on Environment at PMNH on 7th April, 2009*


*Winners of Children Art Competition on Environment on 15th June, 2009*


*Wife of Chinese Ambassador to Pakistan along with Chinese students and officials of the Embassy visited the PMNH on November 1, 2008*

*Engr. Sandi Favier, French Attaché for Science and Technology, visited PMNH on May 19, 2009*


*Inaugural ceremony of workshop "Environment Protection and Conservation of Natural Resources" at PMNH on June 9-10, 2009.*

# 3. PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE (PASTIC)

PASTIC is an ISO 9001: 2000 certified information provider and is the oldest organization in the field of S&T information management and dissemination, serving as a gateway for access to and delivery of global S&T information and catering to the needs of the researchers in all areas of Science and Technology. Users of PASTIC services include researchers, entrepreneurs, academicians, scientists, engineers, industry, policy makers and planners. Collaboration with different organizations and agencies enhances the scope of information that is offered to clients and help PASTIC to respond to the diverse needs of a broad community of users.

PASTIC National Centre is housed in its own building at Quaid-e-Azam University Campus, Islamabad with comprehensive information resources in different fields of Science and Technology. Its six Sub-Centres are working in different cities at Karachi, Lahore, Peshawar, Quetta, Faisalabad and Muzaffarabad. All having access to global information resources and capable of disseminating information to their users. Its sanctioned strength is 158 including Technical and Administrative Staff.

## AIMS & OBJECTIVES

- To acquire, process and disseminate scientific and technological information to the researchers.
- To provide bibliographic information service and document supply service.
- To interact with regional and international information agencies/networks.
- To develop inter-library cooperation, resource sharing at national level.
- To train information personnel in contemporary techniques and methods of information handling.
- To develop and strengthen the National Science Reference Library.
- To compile, publish and update reference information publications, i.e., Union Catalogue of Scientific Periodicals in the Libraries of Pakistan, Directory of S&T Periodicals of Pakistan, and Technology Information Bulletin, etc.
- To publish an abstracting and indexing journal entitled "Pakistan Science Abstracts".

## 3.1 ACTIVITIES AND SERVICES

PASTIC is a multidisciplinary national S&T information centre and its services and activities are aimed at fulfilling needs of its users by providing the latest information. The information services provided by PASTIC are those which are essential for undertaking research and development work for providing socio-economic uplift of the country. The activities undertaken during the period, July 2008 to June 2009 are briefly described below:

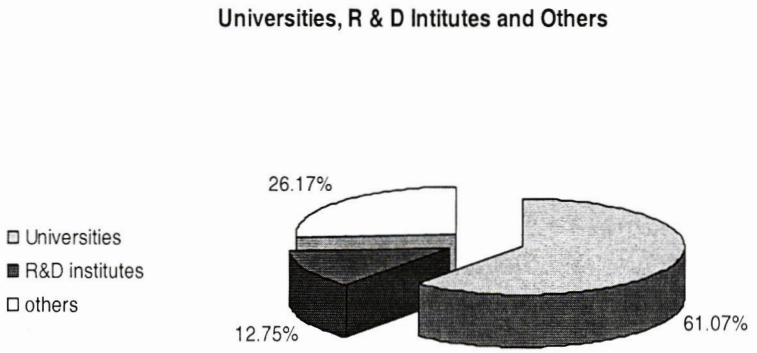
### 3.1.1 DOCUMENT PROCUREMENT AND SUPPLY SERVICE

Under the Document Procurement and Supply Service, requests were received from different R&D organizations for supply of reprints of research articles, conference papers and reports, etc. In order to fulfill the demand of clients, reprints of 1037 articles were procured either from local sources or from abroad, and supplied to 781 researchers during the year 2008-09. Major user organizations included Quaid-i-Azam University, Islamabad; Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi; Azad Jammu and Kashmir University, Muzaffarabad; Dr. A.Q. Khan Research Labs; PIEAS; LUMS; Army Medical College, Rawalpindi; PCSIR Labs; University of Punjab, Lahore; HEJ Research Institute of Chemistry; University of Karachi, Karachi; University of Agriculture, Faisalabad, etc The Union Catalogue of the S&T libraries of Pakistan compiled by PASTIC was mainly used for locating the literature available in local libraries. The major local sources and libraries who shared their resources in providing literature included.

1. Quaid-i-Azam University, Islamabad
2. PCSIR Laboratories, Lahore
3. PCSIR Laboratories, Karachi
4. National Institute of Health, Islamabad
5. PINSTECH, Islamabad
6. University of Peshawar, Peshawar
7. University of Karachi, Karachi
8. NED University of Engineering & Technology, Karachi
9. HEJ Research Institute of Chemistry, Karachi
10. University of the Punjab, Lahore

11. Aga Khan University, Karachi
12. University of Agriculture, Faisalabad
13. National Agricultural Research Centre, Islamabad
14. Higher Education Commission, Islamabad
15. Pakistan Forest Institute, Peshawar
16. College of Physicians & Surgeons Pakistan, Karachi
17. NIBGE, Faisalabad
18. Kahuta Research Laboratories, Rawalpindi
19. NWFP Agricultural University, Peshawar
20. University of Engineering & Technology, Lahore, etc.

For foreign procurement of articles mainly British Library is used. To expedite the procurement process, PASTIC uses e-mail contacts so that information delivery is done and delays are minimized. Major breakup of the types of user organizations is as follows:




### 3.1.2 BIBLIOGRAPHIC INFORMATION SERVICE/LITERATURE SEARCH

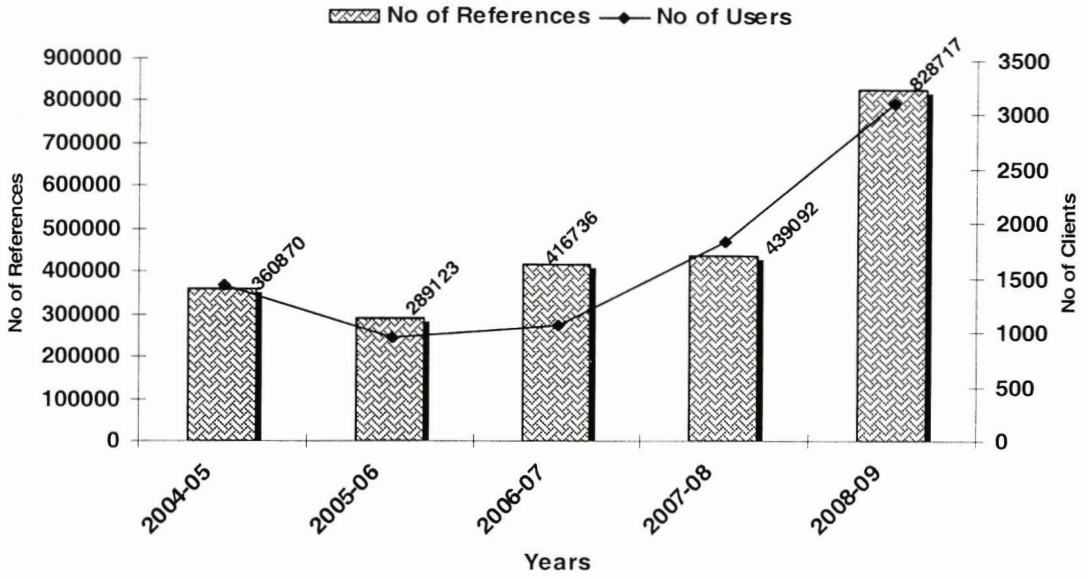
PASTIC has a collection of international online and offline S&T databases. Literature survey is carried out for searching abstracts / references from these databases and supplied to users according to their research topics on request. A total of 828,717 abstracts/references on various S&T topics were supplied to 3,096 research workers and other users during the period under review from the following databases.

1. Medline (Health & Medicine)
2. Life Science (Biology)
3. Poltox (Pollution & Toxicology)
4. Applied Science & Technology (Applied Sciences & Engineering)
5. Derwent Biotech. Abstracts (Biotechnology)
6. Proquest (Full text) (Physics)
7. INSPEC (Physics)
8. Sociological Abstracts (Sociology)
9. Sociofile (Sociology)
10. Science Citation Index
11. Compendex Site Enhance (Engineering & Technology)
12. Ulrich's International Periodical Directory
13. Em-Biology Online (Biology & Medicine)
14. CSA Pollution Abstract Online (Environmental Pollution)

For further strengthening of the bibliographic information service and resources of PASTIC and its Sub-Centres, following online bibliographic databases were purchased.

1. EM biology 1980-present (On Line)
2. Health and Safety Science Abstracts (On Line)
3. Abstracts in New Technologies & Engineering (On Line)

## Number of Abstracts Supplied & Users Served




### 3.1.5. ABSTRACTING AND INDEXING SERVICE

#### a. PAKISTAN SCIENCE ABSTARCTS (PSA)

PASTIC provides abstracting and indexing service by publishing an abstracting journal entitled "Pakistan Science Abstracts" in ten different scientific disciplines, which serves as a secondary information source to give support to research and development activities in the country. The scientific information generated in Pakistan or abroad and published in Pakistani S&T journals is documented in the form of abstracts along with detailed author index and keyword index in this secondary journal.

In this regard, all processing for compilation such as data collection, scanning, typing, formatting, indexing, composing, dummy preparation, proof reading and editing of ten issues of Pakistan Science Abstracts of 2007 was carried out and completed. PSAs in following ten disciplines were published during the year 2008-09.

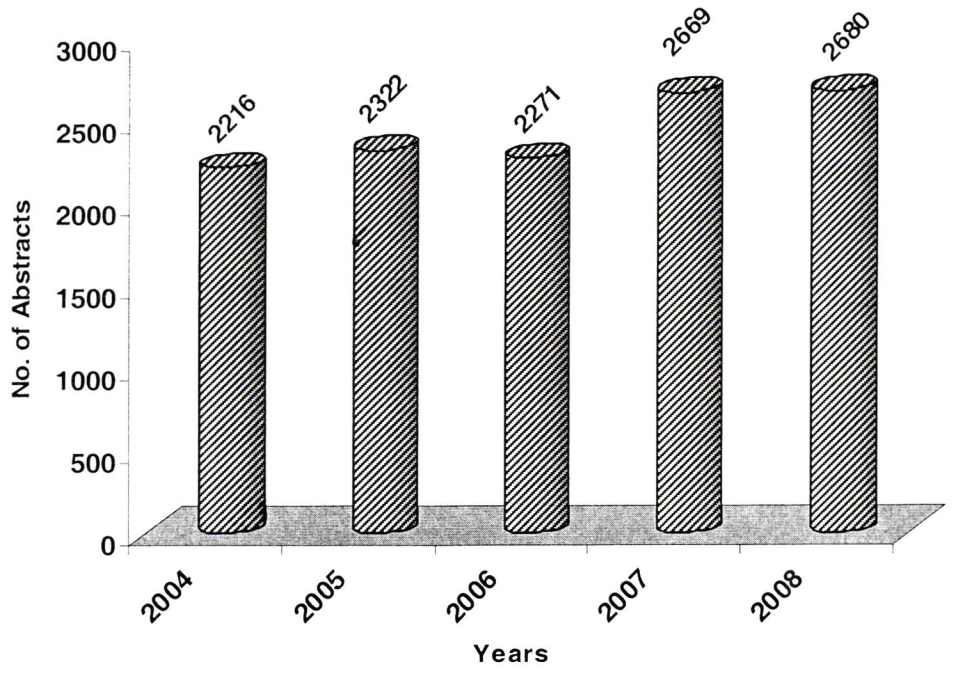
- Agricultural Sciences, 2007, Vol.45-A
- Animal Sciences, 2007, Vol.45-D
- Biochemistry & Biotechnology, 2007, Vol.45-B
- Chemical & Pharmaceutical Sciences, 2007, Vol.45-C
- Earth & Environmental Sciences, 2007, Vol.45-E

- Information Communication & Engineering Sciences, 2007, Vol.45-I
- Mathematics & Statistics, 2007, Vol.45-G
- Medical Sciences, 2007, Vol.45-H
- Plant Sciences, 2007, Vol.45-J
- Physics, 2007, Vol.45-F

All these PSAs were distributed among S&T and R&D organizations and academic institutions as part of information dissemination activities.

All processing for compilation of Pakistan Science Abstracts 2008 Vol. 46 (Earth & Environmental Sciences, Animal Sciences, Information Communication & Engineering Sciences, Mathematics & Statistics, Biochemistry & Biotechnology, Medical Sciences) was completed and these five abstracting journals of 2008 were published. These subject wise PSAs have proved to be quite useful for diverse nature of users.

**Number of Articles abstracted during the last five years**



### b. TECHNOLOGY INFORMATION SERVICE

Technology Information Section is aimed at provision and dissemination of Technological Information Service particularly to Engineers, Entrepreneurs, SMEs and the Industry. The aim is to facilitate growth, potential and competitiveness among SMEs at national and international levels. Technology Information Section was reshaped and following activities were carried out.

- Initiated the development of Technology Database which is based on information pertaining to trade and technology offers and business opportunities. Information for this database was acquired from abroad in 14 different sectors, i.e., Agro-Industries, Pharmaceuticals, Energy, Electronics, Business Opportunities, Food Processing, Machinery, Bio-technology, Textiles, Fisheries, Building Materials, Chemicals, Packaging, Mining.
- Technology Information website was developed for promotion of Technology Information Services which is ready for launching.
- A bimonthly news e-bulletin for dissemination of Technology Information entitled "Technology Roundup" was launched. The aim of launching this news bulletin was to publish technology news, news pertaining to Technology Events and Trade & Technology offers.
- Seminars on Technology Information Services for promotion of Industrial activities as well as creating awareness about S&T information services were organized in Rawalpindi, Karachi and Peshawar in collaboration with Chamber of Commerce & Industry and Industrial Estates.
- Guidance for patenting was provided to the scientists of Kahuta Research Laboratories, Pakistan Medical & Research Council and an Entrepreneur.

### 3.1.4 PASTIC NATIONAL SCIENCE REFERENCE LIBRARY

PASTIC National Science Reference Library is aimed at providing reference and referral services to the users and strengthening of all the services of PASTIC particularly document supply service, bibliographic information service, abstracting and indexing service, technological information service, etc. In this context, acquisition of published library material and library automation activity remained in progress. It is planned to make library the National Resource Centre for all types of Scientific and Technological literature published in the country. PASTIC library has a collection of more than 8,500 books on natural & applied sciences, over 1550 titles of national & international S&T journals (278,002 issues) and 8904 miscellaneous documents and reports.

During 2008-2009, about 690 users visited PASTIC Library for reference purpose, reading and photocopying services and 306 articles were supplied to the researchers. Besides, library received 631 issues of different national and international journals. In addition to 138 books, 106 reports, miscellaneous documents, etc. were acquired, processed and shelved for use. Library bulletin of fresh arrivals was regularly published during the period under review and distributed among relevant circles for current awareness purpose.

### 3.1.5 REPROGRAPHIC SERVICE

The Reprographic Section of PASTIC has facilities ranging from photocopying to offset printing. During the year, about 97 printing jobs were undertaken for 13 R&D organizations including composing, offset and laser printings.

PASTIC is also in the process of strengthening its Reprographic Unit (Printing Press), regarding its facilities for providing efficient printing service to other S&T organizations. In this regard, some small machines / equipments was purchased. However for heavy machine, a development project of Rs.37.00 million entitled "Strengthening and Enhancement of PASTIC Reprographic Services" was approved by DDWP of Ministry of Science & Technology in April, 2008 but funding from Government for executing the project is still awaited.

### 3.1.6 INTERNATIONAL LIAISON

PASTIC is the National Focal Point of International/Regional Information Centres and Networks like, SAARC Documentation Centre, WHO / CEHANET and National distributor for UNESCO developed library management software WINISIS. The following collaborating activities were undertaken under international liaison activities.

**UNESCO:**

PASTIC is responsible for the distribution of UNESCO developed software/packages such as WINISIS & IDAMS and also provides training. WINISIS Package was provided to 14 organizations, i.e., Law Parliamentary Affairs and Human Rights Department NWFP, Peshawar; Frontier Police, Peshawar; Home and Tribal Affairs Department NWFP, Peshawar; Advocate Generals Office, Peshawar; Model District Court Library, Swat; Ayub Agriculture Research Institute, Faisalabad; Islamia University Rahim Yar Khan Campus, Rahim Yar

Khan; University College of Engineering, Islamia University, Bahawalpur; Govt. Degree College for Women, Khairpur, Tamewall Govt. College for Elementary Teachers, Bahawalpur; Govt. College of Commerce Polytechnic Institute for Women, Bahawalpur; Govt. Degree College, Hasilpur; Govt. Degree College for Women Satellite Town, Bahawalpur; Army Public School & College, Bahawalpur; Islamia University, Bahawalpur; 46 Students of Library & Information Sciences, Peshawar and 7 other individual Library and Information Professionals of Islamia University, Bahawalpur.

**SAARC DOCUMENTATION CENTRE (SDC):**

SDC is a regional centre of SAARC which was established in 1994 to act as an effective information system of Member States to enable them to exchange information in various fields of S&T. Another objective of SDC is to develop human resource in the Member States in the area of information science, technology, management systems and services. In this regard, following activities were undertaken during this year.

- Director PASTIC, participated in 14th Governing Board Meeting of SAARC Documentation Centre from 10-11 November, 2008 held at SDC, New Dehli, India in capacity of Governing Board Member of SDC from Pakistan.
- Additional Director (Doc), attended 6th SDC-NFP Coordinator's Meeting from 21-22 October, 2008 at SDC, New Dehli, India as SDC-NFP Coordinator from Pakistan.
- Under SDC-NFP coordination activities 21 titles of scholarly primary research journals and secondary journals of 2008 of major disciplines of science and technology being published by National Institute of Science Communication and Information Resources (NISCAIR) were regularly received.
- Activities of exchange of information with SAARC Documentation Centre were carried out for fulfilling the information requirements of Scientists and R&D workers.
- SDC Newsletter were distributed and disseminated among relevant libraries and institutions.
- The Following officers from Pakistan were sent for different trainings and participation in workshops conducted by SDC under its Human Resource Development Program.
    - Dr. Siraj-ud-Din, Lecturer, Department of Botany, Islamia College University, Peshawar attended the workshop on "Herbarium Techniques" at NISCAIR, SDC, New Delhi, India from 20-25 October, 2008.
    - Mr. Ghulam Abbas, Assistant Professor, Department of Library and Information Science, Islamia University, Bahawalpur attended Short-Term Training Course on "Information Technology for Information

Management" from 25th May to 26th June, 2009 at SAARC Documentation Centre (SDC), New Delhi, India.

- Mr. Sammer Abbas Kazmi, Computer programmer, Ministry of Foreign Affairs attended 1st batch of SDC Attachment Training Program of 2009 at SAARC Documentation Centre (SDC), New Delhi, India.

### 3.1.7 BILATERAL COOPERATION:

Proposals were prepared and submitted to PSF/MoST for bilateral cooperation in the field of Information Exchange with counterpart organizations in Thailand & China and for funding / technical assistance from IDRC, USA and D-8 countries.

### 3.1.8 PASTIC INFORMATION SERVICE STALLS AT THE DOORSTEP OF UNIVERSITIES

PASTIC Service Stalls were arranged at the following Universities to provide S&T information services at the doorstep of the Universities to facilitate researchers and the faculty members. Detail of these Stalls is as follows:

**KARACHI**

| S.# | Date | Venue |
|---|---|---|
| 1 | 10-11-08 | Bahria University, Karachi Campus |
| 2 | 11-11-08 | National Nematological Research Centre, University of Karachi |
| 3 | 12-11-08 | Institute of Clinical Psychology, University of Karachi |
| 4 | 13-11-08 | Department of Zoology, University of Karachi |
| 5 | 15-11-08 | Department of Microbiology, University of Karachi |
| 6 | 03-02-09 | Seminar on S&T Information Needs of the Food Industry |
| 7 | 28-02-09 | Faculty of Pharmacy, University of Karachi |
| 8 | 21-01-09 | Workshop on Nutraceuticals, HEJ Research Institute of Chemistry Karachi |
| 9 | 06-04-09 | Department of Genetics, University of Karachi |
| 10 | 11-04-09 | Department of Physics, University of Karachi |
| 11 | 16-04-09 | Department of Zoology, University of Karachi |
| 12 | 27-04-09 | Department of Mathematics, University of Karachi |
| 13 | 08-05-09 | Department of Geology, University of Karachi |
| 14 | 18-05-09 | Institute of Marine Sciences, University of Karachi |

**ISLAMABAD**

| | | |
|---|---|---|
| 15 | 10-11-08 | Fatima Jinnah Women University |
| 16 | 15-11-08 | Quaid-i-Azam University |
| 17 | 18-11-08 | University of Arid Agriculture |

**LAHORE & PUNJAB**

| | | |
|---|---|---|
| 18 | 12-11-08 | Government College University, Lahore |
| 19 | 21-01-09 | Punjab University, Lahore |
| 20 | 21-02-09 | PCSIR Laboratories Complex, Lahore |
| 21 | 24-02-09 | Islamia University Bahawalpur |
| 22 | 19-03-09 | 4th International Symposium on Fisheries organized by Pakistan Fisheries Society |
| 23 | 24-04-09 | Conference of the Pakistan Society of Food Scientists and Technologists |

**PESHAWAR, KOHAT & BANNU**

| | | |
|---|---|---|
| 24 | 10-11-08 | Department of Zoology University of Peshawar |
| 25 | 11-11-08 | Department of Environmental Science, University of Peshawar |
| 26 | 12-11-08 | Department of Botany, University of Peshawar |
| 27 | 13-11-08 | Institute of Development Sciences, NWFP Agricultural University, |
| 28 | 15-11-08 | Department of Anthropology, University of Peshawar |

**FAISALABAD**

| | | |
|---|---|---|
| 29 | 14-11-08 | University of Agriculture |
| 30 | 20-05-09 | NIAB (Nuclear Institute for Agriculture and Biology) |
| 31 | 26-05-09 | NIBGE, |
| 32 | 02-06-09 | University of Faisalabad |
| 33 | 03-06-09 | University of Agriculture (Main Library) |
| 34 | 04-06-09 | University of Agriculture (Science Faculty) |

**A J & K**

| | | |
|---|---|---|
| 35 | 10-11-08 | University of A J & K, Muzaffarabad |

**QUETTA**

| | | |
|---|---|---|
| 36 | 12-11-08 | University of Balochistan |

PASTIC Services received a big boost through these stalls and a large number of users availed the services.

### 3.5.8 HUMAN RESOURCE DEVELOPMENT

Another important activity of PASTIC is to impart training to information professionals on computer applications for library automation and information management as well as organization of workshops and seminars on related diverse topics. In this regard, following training workshops / seminars were organized.

#### a. TRAININGS/WORKSHOPS/SEMINARS ORGANIZED

- Seminar on "The Role of S&T Information for the Promotion of Industrial Activities" organized on December 03, 2008 at Delta Pharma, Nowshera Industrial Estate, Risalpur.
- Workshop on "Library Automation (WINISIS)" organized at Bahawalpur in collaboration with the Islamia University, Bahawalpur during 22-24 January, 2009.
- Seminar on "S&T Information Needs of the Food Industry", organized at Karachi in collaboration with Chamber of Commerce and Industry on February 03, 2009
- Seminar on "Value Addition in the Industrial Activity through S&T Information and R&D Support Services of PASTIC/PSF" at Rawalpindi Chamber of Commerce and Industry on March 12, 2009
- A Workshop on "Technology Tools for Library Operations, Information Storage and Retrieval", at Mehran University of Engineering & Technology, Jamshoro, April 13-23, 2009.
- Workshop on "Library Automation (WINISIS)" organized at Peshawar during 13-15 May, 2009.
- Workshop on "Data Warehousing and Data Minning" organized at Islamabad in collaboration with the Institute of Information and Management Sciences, Foundation University, Islamabad during 21-22 May, 2009.

#### b. LECTURES DELIVERED

- Ms. Nageen Ainuddin, Director, PASTIC delivered a presentation on "PASTIC Information Services" at the workshop on Library Automation at Islamia University, Bahawalpur, 22-24 January, 2009.
- Ms. Nageen Ainuddin, Director, PASTIC delivered a presentation in a seminar on "S&T Information Needs of the Food Industry" at Karachi on 3rd February, 2009.
- Mr. Muhammad Aqil Khan, Additional Director (Documentation) delivered a presentation on PASTIC & its Patent Information Services in the

"Seminar/Training Workshop on Patent Filing Procedure" which was held at COMSATS Institute of Information Technology, Islamabad. This seminar was jointly organized by IPO, Pakistan and CIIT, Islamabad on 22 January, 2009.

- Mr. Muhammad Aqil Khan, Additional Director (Documentation) also delivered a presentation on "Role of S&T Information in Development Process – PASTIC Services" in the Seminar held at Rawalpindi Chamber of Commerce & Industry, Rawalpindi.
- Mr. Saifullah Azim, Sr. System Analyst and Mr. Naveed Noor, System Analyst delivered a presentation on "Searching Techniques" at PASTIC, PSF and PMNH on 3rd, 4th and 5th March, 2009 respectively.
- Mr. Muhammad Hassnain, Officer Incharge, PASTIC Sub-Centre, Faisalabad delivered a talk on "PASTIC Information Services" at NIAB on 24th June, 2009.
- Mr. Ali Raza, Officer Incharge PASTIC Sub Centre, Lahore delivered a Presentation on PASTIC and its Information Services in the 4th National Symposium on Fisheries which was held on 18-19 March, 2009 at Lahore.

## a. MEETINGS/WORKSHOPS/TRAININGS ATTENDED

- Ms. Nageen Ainuddin, Director PASTIC participated in the meeting of the Technical Working Group of Directorate of Scientific Information, NARC, on July 24th 2008 at NARC, Islamabad.
- Ms. Nageen Ainuddin, Director PASTIC attended a workshop on "Gender as a Crucial Aspect of Self Esteem and Building Team Spirit" at Preston University, Islamabad on March 25th, 2009.
- Ms. Nageen Ainuddin, Director PASTIC attended 14th Governing Board Meeting of SAARC Documentation Centre from 10-11 Nov. 2008 at SDC, New Delhi, India.
- Mr. Mohammad Aqil Khan, Additional Director (Doc) attended 6th Meeting of the SDC-NFP Cell Coordinators from 21-22 Oct, 2008 at SAARC Documentation Centre, New Delhi, India.
- Mr. Mohammad Aqil Khan, Additional Director (Doc) attended Consultative Meeting on TRIPS Agreement, Flexibilities and Trade Agreements on 13th Nov., 2008 at Intellectual Property Organization (IPO)-Pakistan, Islamabad.
- Mr. Mohammad Aqil Khan, Additional Director (Doc) and Dr. Saima Tanveer, Sr. SIO attended National Workshop on "Innovation Survey of the Industry" on 31st January, 2009 at Islamabad Chamber of Commerce & Industry, Islamabad.
- Mrs. Kausar Sohail, Sr. Bib. Officer and Syed Habib Akhter Jaffari, Sr. Librarian attended a Seminar on "Online searching of Journals/Periodicals of the Publisher Wiley and Blackwell" organized by College of Physicians and Surgeons Pakistan at its Regional Centre in Islamabad on 27th January 2009.
- Mrs. Kausar Sohail, Sr. Bib. Officer and Syed Habib Akhter Jaffari, Sr. Librarian attended a Seminar on "Role of Libraries in Digital Environment" organized by Ministry of Education, Department of Libraries, Islamabad on 28th January, 2009.

- Syed Habib Akhter Jafferi, Sr. Librarian attended the workshop on "Library Management Skills" from 20-25 April, 2009 at Akhter Hameed Khan National Centre for Rural Development and Management, Chak Shahzad, Islamabad.
- Syed Habib Akhter Jafferi, Sr. Librarian attended the National Conference on "Role of Libraries in Creating Knowledge Society" from 11-12 May, 2009 at Pakistan Library Association.
- Dr. Shaheen Shahzad, Sr. Scientific Information Officer and Ms. Ghazala Yasmeen Malik, Officer In-charge PASTIC Sub-Centre, Peshawar participated as Judge and Inspector in International Science & Engineering Fair, organized by Intel Education at National Library, Islamabad from 25-27 January, 2009.
- Dr. Shaheen Shahzad, Sr. SIO participated as Judge in Provincial Fair organized by International Science & Engineering Fair, Intel Education at Islamabad Model College for Girls F-7/4 from 25-27, November, 2008.
- Dr. Saima Tanveer, Sr. SIO attended two weeks Training Course on "Foresight" organized by COMSTECH Secretariat, Islamabad from 30th June to 11th July at COMSTECH, Islamabad.
- Ms. Ghazala Yasmeen Malik, Officer In-charge Peshawar delivered 3 lectures in three different seminars entitled, "What is research and research methodologies and importance of research for Matric and F. Sc students of NWFP" arranged by Intel Education Islamabad at Peshawar.
- Ms. Ghazala Yasmeen Malik, Officer In-charge Peshawar participated in Provincial Fair organized by International Science & Engineering Fair, Intel Education at Peshawar Archives Library N.W.F.P. Peshawar from 3-5, December, 2008
- Ms. Ghazala Yasmeen Malik, Officer In-charge Peshawar attended a Seminar on "Epidemiology, Diagnosis and Control of Infectious Diseases at Veterinary Research Institute (VRI), Peshawar from 24-25 April, 2009 and also delivered a presentation about PASTIC services.
- Mr. Mohammad Ayub Dogar, SIO, attended a Basic IT Training Course (MS Office) organized by Pakistan Computer Bureau, Islamabad from 3-27 Nov, 2008 at Pakistan Computer Bureau, Islamabad
- Mr. Ali Raza Khan, Officer Incharge Lahore attended a Seminar on "Food Safety and Security through Application of Chemistry and Chemical Technologies" organized by the Royal Society of Chemistry UK on 2nd May 2009 at Ambassador Hotel, Lahore.

### 3.1.10 NEW INITIATIVES

During 2008-09 the following new initiatives were taken:

- Selective Dissemination of Information (SDI) service was initiated for research projects funded by PSF and other Government Sources and undertaken by R&D organizations / universities.
- The activity of collection of data and development of following new databases remained in progress.

- Database of the Libraries of S&T and R&D organizations of Pakistan
- Database on S&T Seminars and Conferences organized in Pakistan (2000 onward)
- Database on completed and on going S&T projects in Pakistan (2000 onward)
- Database of S&T / R&D organizations
- Database of Databases available in Pakistan
- Database of S&T Societies & Associations in Pakistan

### 3.1.11 MISCELLANEOUS ACTIVITIES

- Documentation of all the activities of PASTIC undertaken since its inception was initiated. In this regard, a report comprising 50 years activities of PASTIC entitled "50 Years of PASTIC" was compiled and is under printing process. Besides, all publications of PASTIC which had been brought out by PASTIC since its inception were collected and organized in a systematic way in chronological order. A specific scheme has been developed for numbering these publications and specific publication number is being allotted to each of these publications for keeping proper record of these publications and documentation of activities.
- A meeting of the officers in-charge of all PASTIC Sub-Centres was organized in June 2009 at PASTIC Headquarter, Islamabad for training of the officers in-charge for strengthening, promoting and developing services of PASTIC Sub-Centres and generating new activities and planning for the future activities of Sub-Centres. This meeting proved very fruitful and officers in-charge were equipped with necessary skills and ideas for enhancing and strengthening the activities of PASTIC at its all Sub-Centres.
- The activity of updating the database of the Union Catalogue of Serial Holdings of Pakistani Libraries and Directory of Scientific Periodical of Pakistan remained in progress.
- Proceedings of SAARC workshop on "Access to Information & Intellectual Property Rights Issues" was published and distributed among relevant circles.
- Annual Report of PASTIC for the year 2007-08 was published.

*Glimpses of PASTIC Service stall in connection with World Science Day celebrations at Quaid-i-Azam University Campus, Islamabad*

*Students at PASTIC Service Stall on occasion of World Science Day celebration at Islamabad*


*A glimpse of the seminar on "Role of S&T Information for Promotion of Industrial Activities"*


*Dr. Saima Tanveer delivering presentation of PASTIC services in the seminar held at Nowshera*


*Inaugural session of seminar on "S&T Information needs of the Food Industry & R&D Organizations in Pakistan"*


*Chief Guest presenting the shield to the participant during the seminar on "S&T Information needs of the Food Industry & R&D Organizations in Pakistan"*

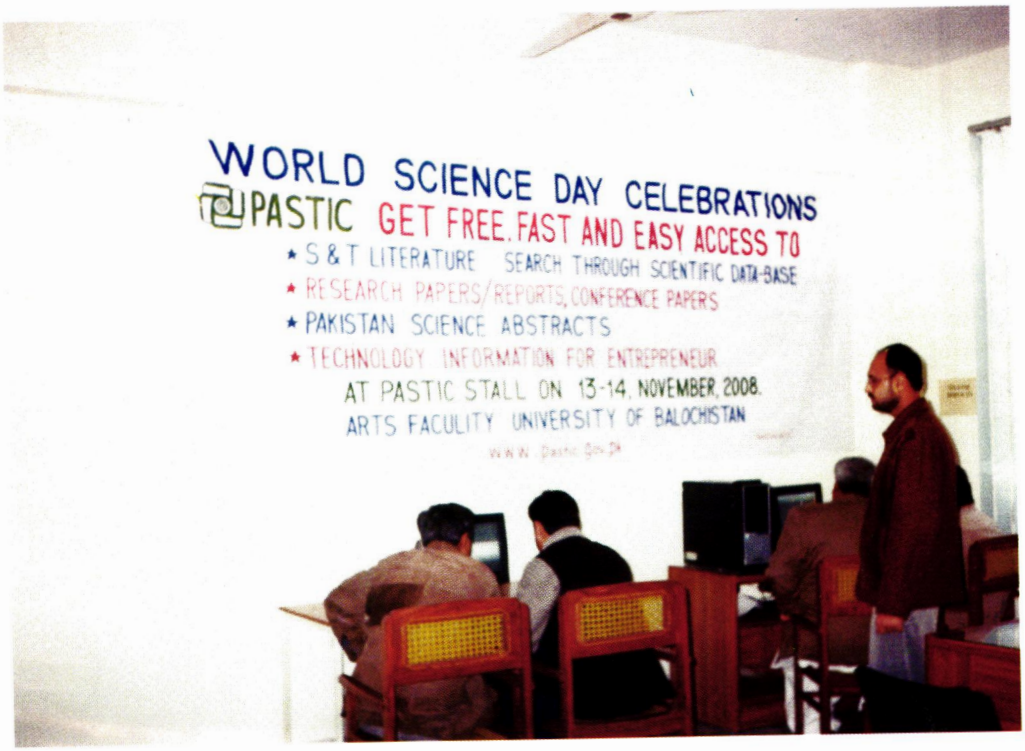

*Dr. Muhammad Ashraf presenting shield to Director, PASTIC during closing ceremony of "PASTIC training workshop on WINISIS" at University of Agriculture, Faisalabad*

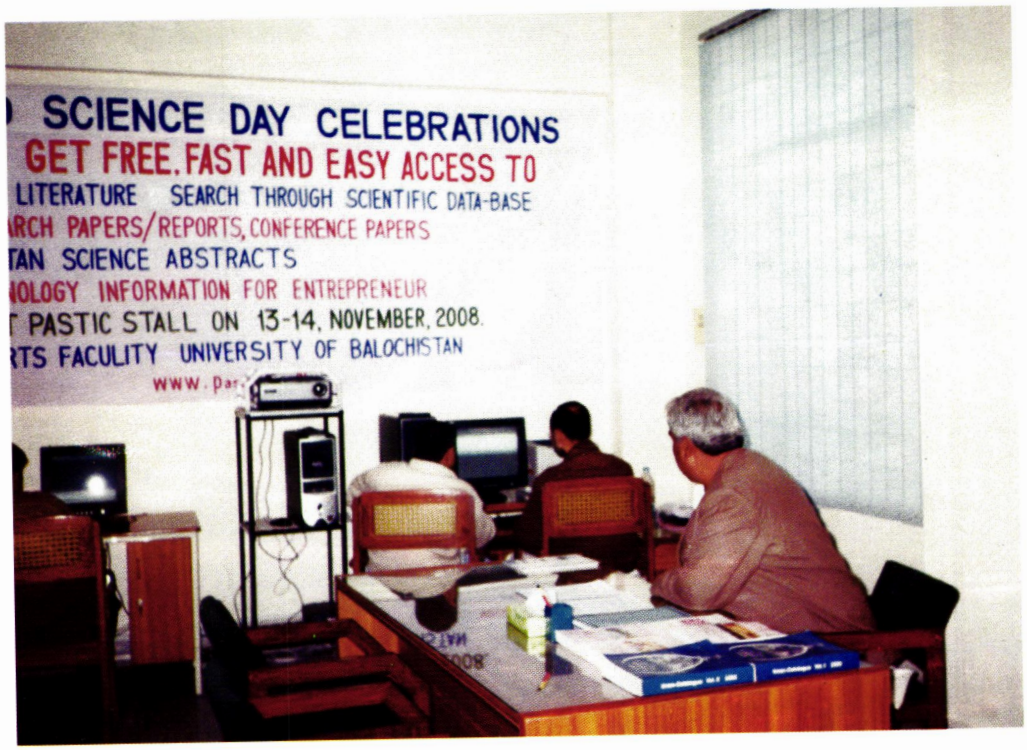

*World Science Day celebration by PASTIC Sub Centre, Faisalabad on 10th November, 2008*


*A student delivering speech on occasion of World Science Day Celebration activity organized by PASTIC Sub Centre, Faisalabad*

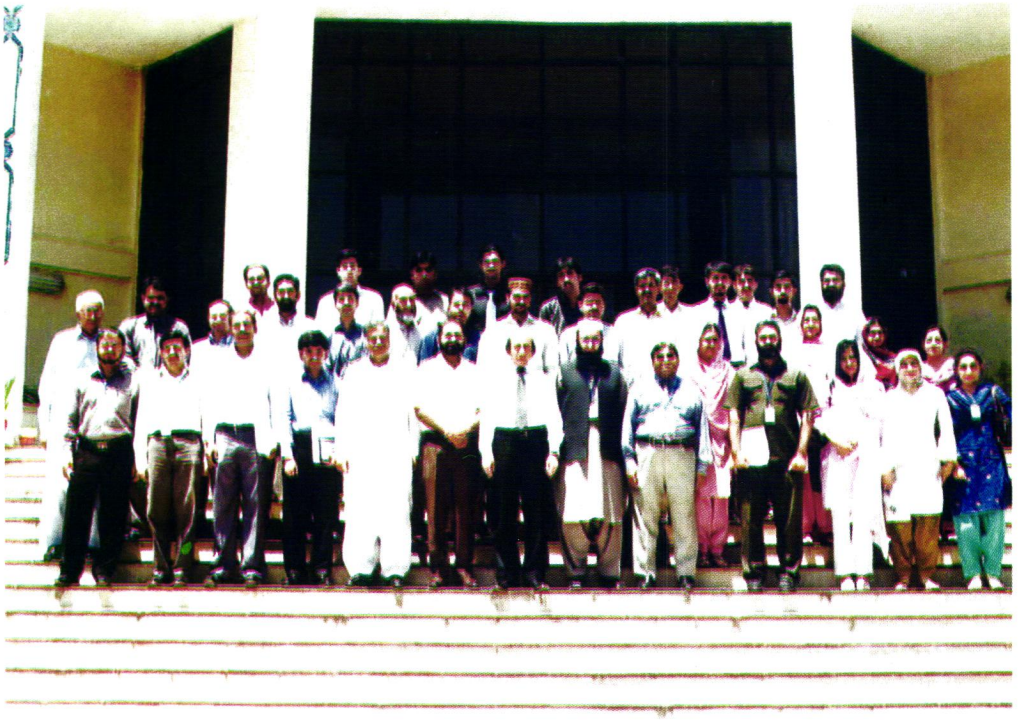

*Prof. Dr. Muhammad Latif Mirza, Pro Vice Chancellor presenting shield to Director, PASTIC during "PASTIC training workshop on WINISIS" at Islamia University, Bahawalpur*

*Certificate distribution ceremony of "PASTIC training workshop on WINISIS" at Bahawalpur*




*World Science Day celebrations organized by PASTIC Sub Centre, Quetta*



*Group photo of the participants of PASTIC workshop on "Data Warehousing and Data Mining" at Islamabad on 21-22 May, 2009*

*Audience at the PASTIC workshop on "Data Warehousing and Data Mining" at Islamabad*


*Dr. Syed Azar Hassan, Chairman, PSF presenting shield to Dr. Ahsan Abdullah: A Resource Person of the Workshop on "Data Warehousing and Data Mining" at Islamabad*


*Inaugural session of workshop on "Data Warehousing and Data Mining" at Islamabad on 21-22 May, 2009*

# ORGANISATION
# &
# ADMINISTRATION

# CHAPTER-2

## ORGANIZATION AND ADMINISTRATION

The organizational structure of Pakistan Science Foundation, Pakistan Museum of Natural History and Pakistan Scientific & Technological Information Centre is given in the forthcoming pages. The staff position in the Foundation, PMNH and PASTIC during the report period is as under:

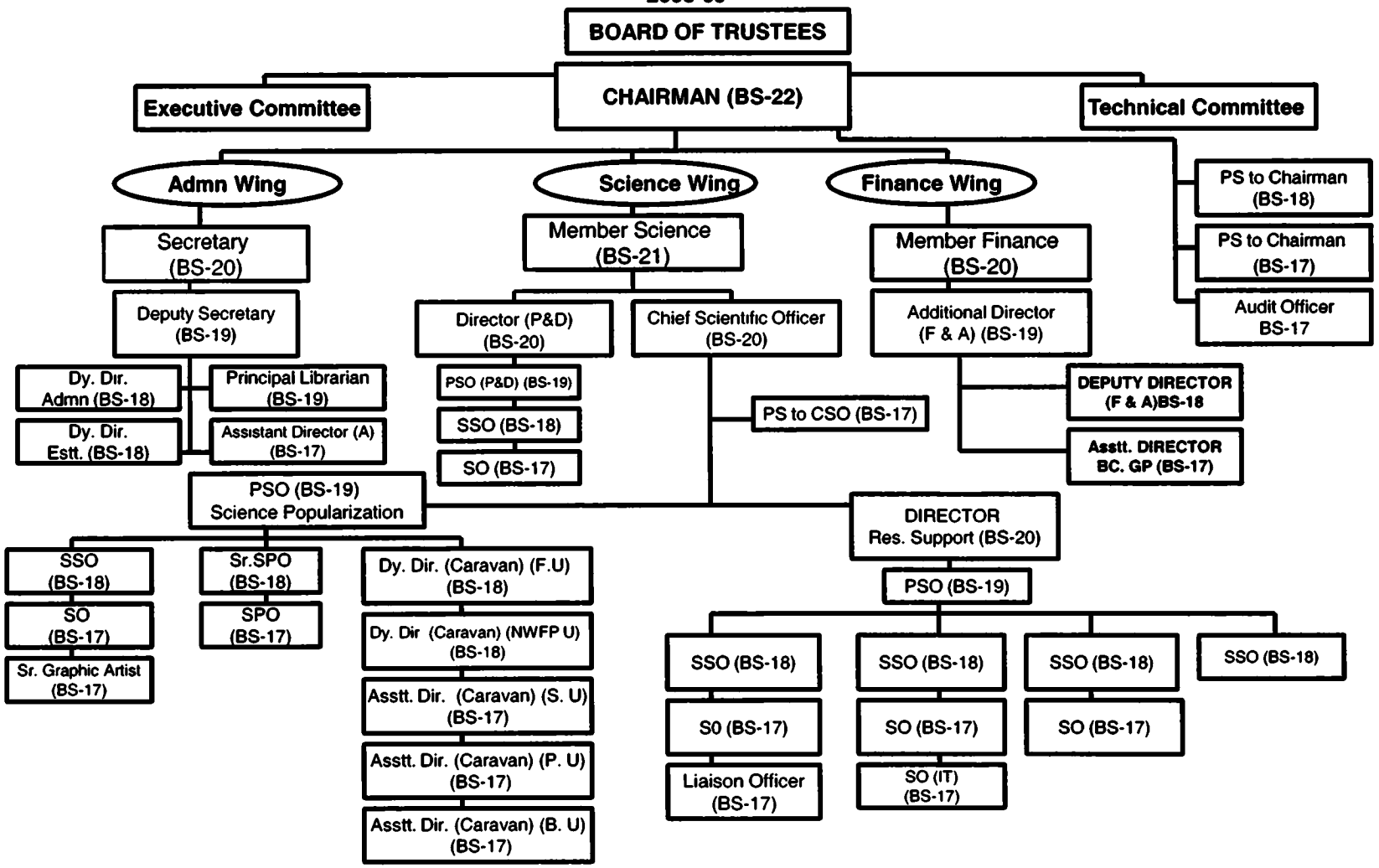
### PAKISTAN SCIENCE FOUNDATION

**SANCTIONED STRENGTH OF PSF FOR THE FISCAL YEAR 2008-09 (AS PER NIS)**

| S. No. | Name of Post | BS | No. of Posts |
|---|---|---|---|
| 1 | Chairman | 22 | 1 |
| 2. | Member Science | 21 | 1 |
| 3. | Member Finance | 20 | 1 |
| 4. | Secretary | 20 | 1 |
| 5. | Director General (P&D) | 21 | 1 |
| 6. | Chief Scientific Officer | 20 | 1 |
| 7. | Director (RS) | 20 | 1 |
| 8. | Sr. Additional Director (F&A) | 19 | 1 |
| 9. | Principal Scientific Officer | 19 | 3 |
| 10. | Deputy Secretary | 19 | 1 |
| 11. | Sr. Librarian | 19 | 1 |
| 12. | Additional Director (BC+GP) | 19 | 1 |
| 13. | Senior Scientific Officer | 18 | 5 |
| 14. | Sr. Science Promotion Officer | 18 | 1 |
| 15. | Sr. Caravan Incharge | 18 | 2 |
| 16. | Dy. Director (F&A) | 18 | 1 |
| 17. | Dy. Director (Admn & Estt.) | 18 | 2 |
| 18. | Personal Secretary to Chairman | 18 | 1 |
| 19. | Scientific Officer | 17 | 7 |
| 20. | Sr. Graphic Artist | 17 | 1 |
| 21. | Assitant Director (Admn.) | 17 | 1 |
| 22. | Personal Secretary to C. S. O. | 17 | 1 |
| 23. | P.S. to Chairman | 17 | 1 |
| 24. | Liaison Officer | 17 | 1 |
| 25. | Carvan Incharge | 17 | 3 |
| 26. | Internal Audit Officer | 17 | 1 |

| | | | |
|---|---|---|---|
| 27. | Science Promotion Officer | 17 | 1 |
| 28. | Mechanic for Instruments | 16 | 1 |
| 29. | Assitant Research Officer | 16 | 1 |
| 30. | Superintenden (Store/Admn/Estt) | 16 | 3 |
| 31. | Accountant | 16 | 4 |
| 32. | PA to Director (P&D) | 16 | 1 |
| 33. | Graphic Artist | 16 | 1 |
| 34. | Sr. Carvan Assistant | 16 | 5 |
| 35. | Sr. Diver-Cum-Mechanic | 16 | 2 |
| 36. | Sr. Planetarium Assistant | 16 | 2 |
| | **Sub Total:-** | | **63** |
| 37. | Stenographer | 15 | 6 |
| 38. | Photographer | 14 | 1 |
| 39. | Caravan Assistant | 14 | 14 |
| 40. | Science Assistant | 14 | 5 |
| 41. | Technical Assistant | 14 | 1 |
| 42. | Steno Typist | 12 | 5 |
| 43. | Calligrapher | 11 | 1 |
| 44. | Cashier | 14 | 1 |
| 45. | Audit & Accounts Assistant | 14 | 2 |
| 46 | Assistant | 14 | 3 |
| 47 | Planetarium Assistant | 11 | 7 |
| 48. | Driver-Cum-Mechanic | 11 | 7 |
| 49. | Sr. Electrician | 11 | 1 |
| 50. | Carpenter | 9 | 1 |
| 51. | UDC | 9 | 4 |
| 52. | LDC/Typist | 7 | 11 |
| 53. | Telephone Operator | 5 | 1 |
| 54 | Driver/D.R. | 5/6/7 | 18 |
| 55. | D.M.O. | 5 | 1 |
| 56. | Quasid/ Naib Quasid | 2/3/4 | 19 |
| 57. | Mali | 2/3 | 2 |
| 58. | Chowkidar | 2/3 | 4 |
| 59. | Caravan Attendant | 2/3 | 9 |
| 60. | Security Guard | 2/3/4 | 11 |
| 61. | Sanitary Worker | 1/2/3 | 4 |
| | **Sub Total:** | | **139** |
| | **Grand Total:** | | **202** |

# PAKISTAN SCIENCE FOUNDATION
## ORGANIZATIONAL CHART
## 2008-09

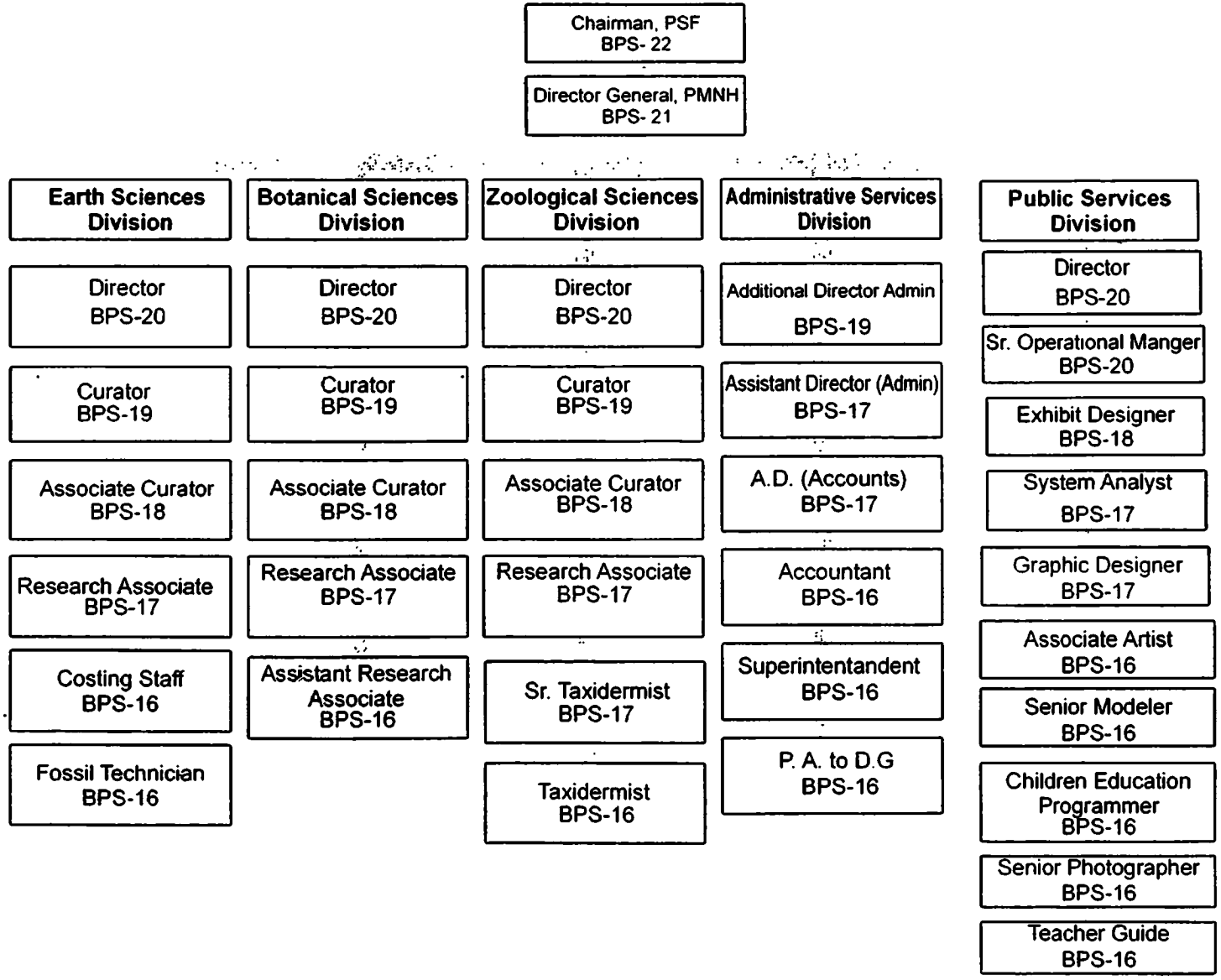


## PAKISTAN MUSEUM OF NATURAL HISTORY

### SANCTIONED STRENGTH FOR THE FISCAL YEAR 2008-09 (AS PER NIS)

| Sr. No | Name of Post | BPS | No. of Post |
|---|---|---|---|
| 1. | Director General | 21 | 1 |
| 2. | Director | 20 | 4 |
| 3. | Sr. Operational Manager | 20 | 1 |
| 4. | Curator | 19 | 7 |
| 5. | Additional Director (Admin) | 19 | 1 |
| 6. | Associate Curator | 18 | 8 |
| 7. | Exhibit Designer | 18 | 1 |
| 8. | Assistant Director (Admin) | 17 | 1 |
| 9. | Assistant director (Accounts) | 17 | 1 |
| 10. | Research Associate | 17 | 16 |
| 11. | Graphic Designer | 17 | 1 |
| 12. | Sr. Taxidermist | 17 | 1 |
| 13. | System Analyst | 17 | 1 |
| 14. | Assistant Research Associate | 16 | 2 |
| 15. | P.A. to the Director General | 16 | 1 |
| 16. | Associate Artist | 16 | 1 |
| 17. | Teacher Guide | 16 | 1 |
| 18. | Children Education Programmer | 16 | 1 |
| 19. | Sr. Photographer | 16 | 1 |
| 20. | Accountant | 16 | 2 |
| 21. | Assistant Librarian | 16 | 1 |
| 22. | Taxidermist | 16 | 1 |
| 23. | Superintendent | 16 | 1 |
| 24. | Casting Staff | 16 | 1 |
| 25. | Fossil Technician | 16 | 1 |
| 26. | Sr. Modeler | 16 | 1 |
| | **TOTAL** | | **59** |
| | **Supporting Staff** | | **77** |
| | **GRAND TOTAL** | | **136** |

# PAKISTAN MUSEUM OF NATURAL HISTORY
## Organizational Chart



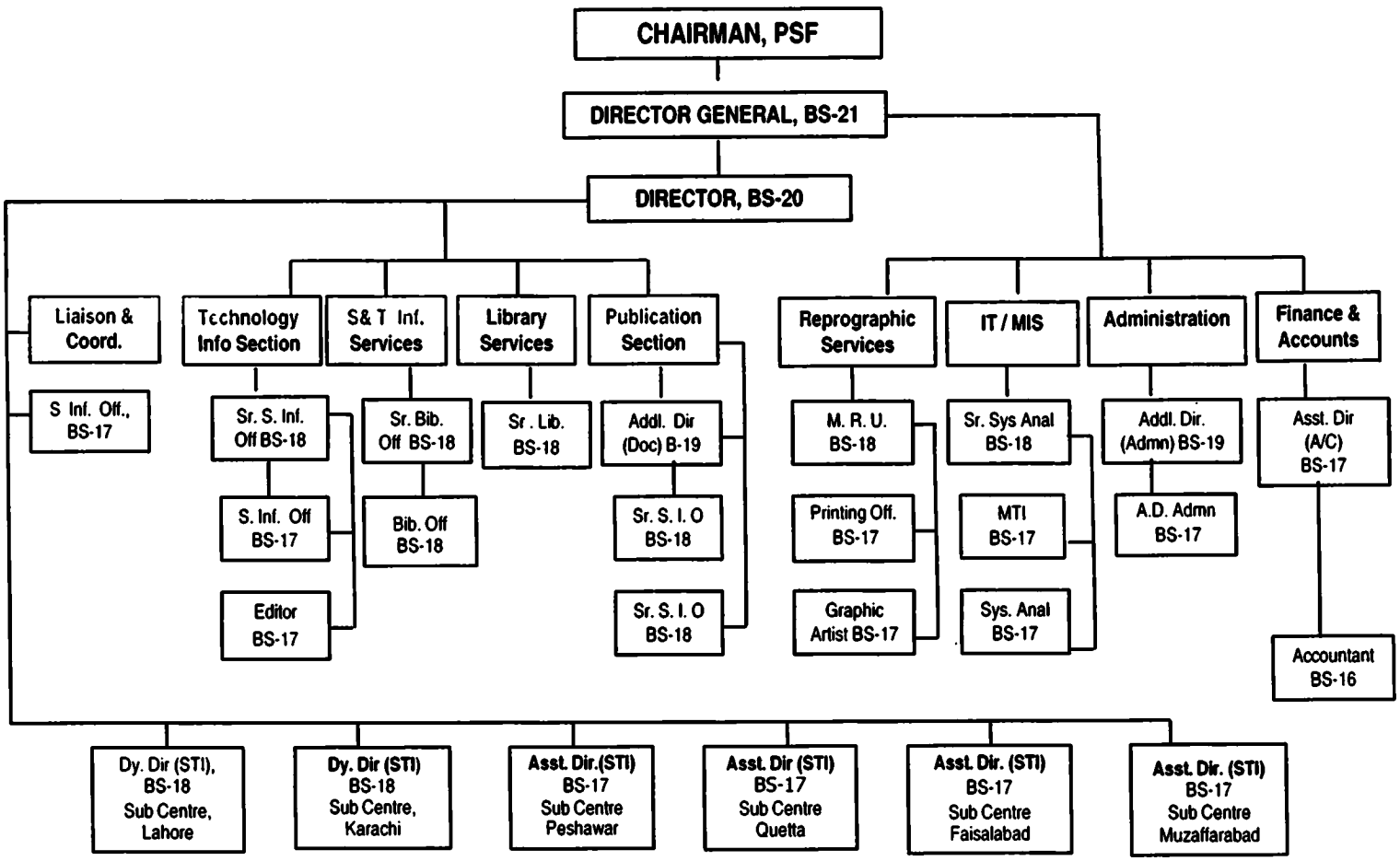
## PAKISTAN SCIENTIFIC & TECHNOLOGICAL INFORMATION CENTRE, ISLAMABAD

## SANCTIONED STRENGTH FOR THE FISCAL YEAR 2008-09 (AS PER NIS)

| S. No. | ➢ Name of Post | BS | No. of Posts |
|---|---|---|---|
| 1. | Director General | 21 | 1 |
| 2. | Director | 20 | 1 |
| 3. | Additional Director (Admn.) | 19 | 1 |
| 4. | Deputy Director (Doc) | 19 | 1 |
| 5. | Deputy Director (STI) | 18 | 2 |
| 6. | Sr. Bibliographic Officer | 18 | 1 |
| 7. | Manager Reprographic Unit | 18 | 1 |
| 8. | Sr. System Analyst. | 18 | 1 |
| 9. | Sr. Librarian | 18 | 1 |
| 10. | Sr. Scientific Information Officer | 18 | 4 |
| 11. | Assistant Director (Accounts) | 17 | 1 |
| 12. | Assistant Director (STI) | 17 | 4 |
| 13. | Scientific Information Officer | 17 | 5 |
| 14. | Bibliographic Officer | 17 | 1 |
| 15. | System Analyst | 17 | 1 |
| 16. | Web Manager | 17 | 1 |
| 17. | Manager Technology Information | 17 | 1 |
| 18. | Printing Officer | 17 | 1 |
| 19. | Graphic Artist | 17 | 1 |
| 20. | Assistant Director (Admn) | 17 | 1 |
| 21. | Technology Information Officer (Marketing) | 17 | 1 |
| 22. | Editor | 17 | 1 |

| | | | |
|---|---|---|---|
| 23. | Assistant Accounts Officer | 16 | 1 |
| 24. | PA to Director General. | 16 | 1 |
| 25. | Superintendent (Reprographic Unit) | 16 | 1 |
| 26. | Superintendent (Admn) | 16 | 1 |
| 27. | Asstt. Scientific Information Officer | 16 | 4 |
| 28. | Asstt. Documentation Officer. | 16 | 1 |
| 29. | Asstt: Programmer. | 16 | 2 |
| 30. | Asstt. Web Manager | 16 | 1 |
| 31. | Asstt. Manager Reprographic Unit | 16 | 1 |
| 32. | Asstt. Printing Officer | 16 | 3 |
| 33. | Accountant | 16 | 1 |
| | | **Total:** | **50** |
| | **Supporting Staff** | | **113** |
| | **Grand Total** | | **163** |

# ORGANIZATIONAL CHART OF PASTIC 2008-09



# AUDITOR'S REPORT

# CHAPTER – 3

## PAKISTAN SCIENCE FOUNDATION
## FINANCIAL STATEMENTS
## JUNE 30, 2009

Amir Alam Khan & Co.
Chartered Accountants
55/1, Bank Road, Rawalpindi
Tele: 5563483, 5563256
Fax : 5517358
E-mail: aakco@brain.net.pk

### AUDITORS' REPORT TO THE MEMBERS

We have audited the annexed balance sheet of **PAKISTAN SCIENCE FOUNDATION** as at June 30, 2009 and the related income and expenditure account and cash flow statement together with notes forming part thereof (here-in-after referred to as financial statements) for the year then ended, and we state that we have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of our audit.

It is the responsibility of the management to establish and maintain a system of internal control, and prepare and present the financial statements in conformity with the approved accounting standards as applicable in Pakistan Our responsibility is to express an opinion on theses financial statements based on our audit.

We conducted our audit in accordance with the auditing standards as applicable in Pakistan. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatements. An audit includes examining, on a test basis, evidence supporting the amount and disclosures in the financial statements. An audit also includes assessing the accounting policies used and significant estimates made by management, as well as, evaluating the overall presentation of the financial statements We believe that our audit provides a reasonable basis for our opinion and after due verification, we report that;

In our opinion and to the best of our information and according to the explanation given to us, these financial statements give the information as required and present fairly in all material respects the financial position of the **PAKISTAN SCIENCE FOUNDATION** as at June 30, 2009 and of its (deficit) and cash flow for the year then ended in accordance with the approved accounting standards as applicable in Pakistan

Rawalpindi,

(Amir Alam Khan & Co.)
Chartered Accountants
Habib Fakhruddin FCA

## PAKISTAN SCIENCE FOUNDATION
## BALANCE SHEET AS AT JUNE 30, 2009

| | Note | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|---|
| **FUNDS** | | | |
| General fund | 3 | **24,449,007** | 24,819,941 |
| Development fund | 4 | **14,821,885** | 17,523,331 |
| Fair fund | 5 | **247,500** | 236,727 |
| ECO science foundation fund | | **1,147** | - |
| Miscellaneous funds | 6 | **916,428** | 1,194,387 |
| | | **40,435,967** | 43,774,386 |
| **NON-CURRENT LIABILITIES** | | | |
| Research support grant - Contra | | **98,261,442** | 88,399,170 |
| **CURRENT LIABILITIES** | | | |
| Security deposits payable | | **27,300** | 30,300 |
| | | **138,724,709** | 132,203,856 |
| **NON-CURRENT ASSETS** | | | |
| Property, plant and equipment | 7 | **36,610,935** | 39,754,381 |
| Long term deposits | 8 | **1,917,195** | 1,617,195 |
| Research projects in progress - Contra | 9 | **98,261,442** | 88,399,170 |
| | | **136,789,572** | 129,770,746 |
| **CURRENT ASSETS** | | | |
| Advances | 10 | **425,391** | 663,569 |
| Cash and bank balances | 11 | **1,509,746** | 1,769,541 |
| | | **1,935,137** | 2,433,110 |
| | | **138,724,709** | 132,203,856 |

The annexed notes from 1 to 17 form an integral part of these financial statements

Islamabad,

TRUSTEE

CHAIRMAN

**PAKISTAN SCIENCE FOUNDATION**
**INCOME AND EXPENDITURE ACCOUNT**
**FOR THE YEAR ENDED JUNE 30, 2009**

| | Note | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|---|
| **INCOME** | | | |
| GRANT FROM FEDERAL GOVERNMENT | | **91,675,000** | 87,153,000 |
| **EXPENDITURES** | | | |
| STATUTORY SCIENTIFIC FUNCTIONS | 12 | **(40,009,699)** | (36,794,293) |
| ADMINISTRATIVE EXPENSES | 13 | **(52,049,085)** | (51,028,411) |
| PRIOR YEAR ADJUSTMENTS | 14 | **12,850** | (49,034) |
| | | **(92,045,934)** | (87,871,738) |
| **DEFICIT OF INCOME OVER EXPENDITURE TRANSFERRED TO GENERAL FUND** | | **(370,934)** | (718,738) |

The annexed notes from 1 to 17 form an integral part of these financial statements.

Islamabad.

TRUSTEE

CHAIRMAN

## PAKISTAN SCIENCE FOUNDATION
## CASH FLOW STATEMENT
## FOR THE YEAR ENDED JUNE 30, 2009

| | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|
| **CASH FLOWS FROM OPERATING ACTIVITIES** | | |
| Deficit for the year | (370,934) | (718,738) |
| Adjustments for non cash charges: | | |
| Depreciation | 4,743,767 | 5,111,114 |
| Loss on sale of vehicles | - | 4,369 |
| Surplus/(deficit) before working capital changes | 4,372,833 | 4,396,745 |
| **Working capital changes** | | |
| **(Increase)/ Decrease in current assets:** | | |
| Advances | (61,822) | 747,427 |
| **Increase/ (Decrease) in current liabilities:** | | |
| Accrued and other liabilities | (3,000) | (321,096) |
| Net working capital charges | (64,822) | 426,331 |
| Net cash generated from operating activities | 4,308,011 | 4,823,076 |
| **CASH FLOWS FROM INVESTING ACTIVITIES** | | |
| Property, plant and equipment | (1,600,321) | (7,819,804) |
| Net cash used in investing activities | (1,600,321) | (7,819,804) |
| **CASH FLOWS FROM FINANCING ACTIVITIES** | | |
| Development fund | (2,701,446) | 2,902,543 |
| Expo fund | - | (889,916) |
| Fair fund | 10,773 | 2,811 |
| Nobel fund | - | (20,993) |
| ECO science foundation fund | 1,147 | - |
| Miscellaneous funds | (277,959) | (79,505) |
| Net cash from financing activities | (2,967,485) | 1,914,940 |
| **NET (DECREASE)/ INCREASE IN CASH AND CASH EQUIVALENTS** | (259,795) | (1,081,788) |
| **CASH AND CASH EQUIVALENTS AT BEGINNING OF THE YEAR** | 1,769,541 | 2,851,329 |
| **CASH AND CASH EQUIVALENTS AT END OF THE YEAR** | 1,509,746 | 1,769,541 |

The annexed notes from 1 to 17 form an integral part of these financial statements.

Islamabad,

TRUSTEE

CHAIRMAN

## PAKISTAN SCIENCE FOUNDATION
## NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED JUNE 30, 2009

### 1. THE FOUNDATION AND ITS OPERATIONS

Pakistan Science Foundation is a statutory organization established under Pakistan Science Foundation Act, 1973 on February 02, 1973. The main objects are to promote and finance scientific activities having a bearing on the socio-economic needs of the country

### 2. SIGNIFICANT ACCOUNTING POLICIES

The principal accounting policies which have been adopted in the preparation of these financial statements are summarized as under:

#### 2.1 ACCOUNTING CONVENTION

These financial statements have been prepared under the historical cost convention.

#### 2.2 BASIS OF PREPARATION

These financial statements have been prepared under cash receipt and payment method of accounting

#### 2.3 PROPERTY, PLANT AND EQUIPMENT

These are stated at cost less accumulated depreciation except leasehold land, which is stated at cost. Depreciation is charged on reducing balance method of written down values depending upon the class of property, plant and equipment. Full year's depreciation is charged on additions while no depreciation is charged on deletions during the year.

Normal repairs and maintenance are charged to income as and when incurred. Major renewals and improvements are capitalized. Gain on disposal of property, plant and equipment is taken to income and expenditure account.

| | | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|---|
| **3. GENERAL FUND** | | | |
| Opening balance | | **24,819,941** | 25,538,679 |
| Deficit for the year | | **(370,934)** | (718,738) |
| | | **24,449,007** | 24,819,941 |
| **4. DEVELOPMENT FUND** | | | |
| Opening balance | | **17,523,331** | 14,620,787 |
| Grants received during the year | 4.1 | **2,651,373** | 14,767,000 |
| | | **20,174,704** | 29,387,787 |
| Expenditure incurred during the year | 4.2 | **(5,352,819)** | (11,864,456) |
| | | **14,821,885** | 17,523,331 |
| **REPRESENTED BY:** | | | |
| Property, plant and equipment | | **14,619,683** | 17,321,129 |
| Cash at banks | | **289,313** | 279,463 |
| Prior year adjustment | | **(87,111)** | (77,261) |
| | | **14,821,885** | 17,523,331 |

| | | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|---|
| **4.1 DEVELOPMENT PROJECT GRANTS RECEIVED** | | | |
| Participation of scientists and technologists in conferences | | **643,000** | 5,975,000 |
| Automation of PSF research support program and other activities | | **2,008,373** | 8,792,000 |
| | | **2,651,373** | 14,767,000 |
| **4.2 DEVELOPMENT PROJECT EXPENDITURES** | | | |
| TA/DA and evaluation fee | | **-** | 3,165,868 |
| Registration fee | | **-** | 701,022 |
| Postage and stationery | | **26,660** | 213,380 |
| Depreciation | 7.1 | **2,701,446** | 3,224,446 |
| Staff salary | | **1,232,452** | 1,411,054 |
| Miscellaneous | | **768,761** | 482,111 |
| Amount surrendered to FTO/ Treasury | | **-** | 1,112,438 |
| Living expenses | | **-** | 1,468,687 |
| Software | | **623,500** | 85,450 |
| | | **5,352,819** | 11,864,456 |
| **5. FAIR FUND** | | | |
| Opening balance | | **236,727** | 233,916 |
| Profit received during the year | | **10,773** | 2,811 |
| | | **247,500** | 236,727 |
| **REPRESENTED BY:** | | | |
| Fair saving a/c # 13459-1 | | **247,500** | 236,727 |
| | | **247,500** | 236,727 |
| **6. MISCELLANEOUS FUNDS** | | | |
| Opening balance | | | |
| Endowment | | **193,012** | 210,767 |
| UNESCO | | **1,001,375** | 1,005,238 |
| World Science Day | | **-** | 57,887 |
| | | **1,194,387** | 1,273,892 |
| Grants received during the year | | | |
| Endowment | | **40,626** | 13,008 |
| UNESCO | | **-** | 245,920 |
| World Science Day | | **-** | 60,488 |
| | | **40,626** | 319,416 |
| Expenditure incurred during the year | | | |
| Endowment | | **-** | (30,763) |
| UNESCO | | **(318,585)** | (249,783) |
| World Science Day | | **-** | (118,375) |
| | | **(318,585)** | (398,921) |

| | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|
| Closing balance | | |
| Endowment | 233,638 | 193,012 |
| UNESCO | 682,790 | 1,001,375 |
| | 916,428 | 1,194,387 |
| **REPRESENTED BY:** | | |
| Misc. fund saving a/c # 840-09 | 916,428 | 1,194,387 |
| | 916,428 | 1,194,387 |

## PROPERTY, PLANT AND EQUIPMENT

| PARTICULARS | COST | | | RATE | DEPRECIATION | | | | W.D.V |
|---|---|---|---|---|---|---|---|---|---|
| | AS AT JULY 01, 2008 | ADDITIONS / (DELETIONS) | AS AT JUNE 30, 2009 | | AS AT JULY 01, 2008 | ADJUSTMENT | FOR THE YEAR | AS AT JUNE 30, 2009 | AS AT JUNE 30 2009 |
| Land - Leasehold | 3,713,418 | - | 3,713,418 | | | | | | 3,713,418 |
| Building | 19,484,540 | - | 19,484,540 | 5% | 9,482,305 | - | 500,112 | 9,982,417 | 9,502,123 |
| Motor vehicles | 6,055,007 | 1,560,239 | 7,615,246 | 20% | 3,883,992 | | 746,251 | 4,630,243 | 2,985,003 |
| Office equipment | 4,852,442 | 3,800 | 4,856,242 | 15% | 3,541,218 | - | 197,254 | 3,738,472 | 1,117,770 |
| Science equipment | 6,558,040 | | 6,558,040 | 15% | 3,317,841 | - | 486,030 | 3,803,871 | 2,754,169 |
| Furniture and fixture | 2,423,089 | | 2,423,089 | 6% | 1,341,740 | | 64,881 | 1,406,621 | 1,016,468 |
| Air conditioners | 194,974 | | 194,974 | 20% | 193,049 | - | 385 | 193,434 | 1,540 |
| Library books and films | 1,669,679 | 36,282 | 1,705,961 | 5% | 757,792 | - | 47,408 | 805,200 | 900,761 |
| **2009 - Rupees** | **44,951,189** | **1,600,321** | **46,551,510** | | **22,517,937** | **-** | **2,042,321** | **24,560,258** | **21,991,252** |
| 2008 - Rupees | 43,675,575 | 1,692,814 | 44,951,189 | | 21,044,100 | - | 1,886,668 | 22,517,937 | 22,433,252 |
| | | (417,200) | | | | (412,831) | | | |
| DEVELOPMENT PROJECTS | | | | | | | | | |
| Motor vehicles | 6,494,293 | - | 6,494,293 | 20% | 4,546,600 | - | 389,539 | 4,936,139 | 1,558,154 |
| Office equipments | 24,950,380 | - | 24,950,380 | 15% | 10,079,478 | - | 2,230,635 | 12,310,113 | 12,640,267 |
| Computer equipments | 1,300,068 | - | 1,300,068 | 33% | 1,110,734 | - | 62,480 | 1,173,214 | 126,854 |
| Furniture and fixtures | 381,907 | - | 381,907 | 6% | 68,707 | | 18,792 | 87,499 | 294,408 |
| **2009 - Rupees** | **33,126,648** | **-** | **33,126,648** | | **15,805,519** | **-** | **2,701,446** | **18,506,965** | **14,619,683** |
| 2008 - Rupees | 26,999,658 | 6,126,990 | 33,126,648 | | 12,581,073 | - | 3,224,446 | 15,805,519 | 17,321,129 |
| 2009 - Rupees Consolidated | 78,077,837 | 1,600,321 | 79,678,158 | | 38,323,456 | - | 4,743,767 | 43,067,223 | 36,610,935 |
| 2008 - Rupees Consolidated | 70,675,233 | 7,819,804 | 78,077,837 | | 33,625,173 | - | 5,111,114 | 38,323,456 | 39,754,381 |

| | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|
| **7.1 DEPRECIATION ALLOCATION** | | |
| Development projects | 2,701,446 | 3,224,446 |
| Administrative expenses | 2,042,321 | 1,886,668 |
| | 4,743,767 | 5,111,114 |
| **8. LONG TERM DEPOSITS** | | |
| Electricity | 1,472,195 | 1,472,195 |
| Gas | 145,000 | 145,000 |
| CMH Rawalpindi | 300,000 | - |
| | 1,917,195 | 1,617,195 |

| | | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|---|
| **9. RESEARCH PROJECTS IN PROGRESS** | | | |
| Opening balance | | **88,399,170** | 85,515,816 |
| Add. Disbursements during the year | 9.1 | **20,640,378** | 20,765,079 |
| | | **109,039,548** | 106,280,895 |
| Less: Projects completed during the year | 9.2 | **(9,175,728)** | (17,156,846) |
| Expenses for projects | 9.3 | **(1,602,378)** | (724,879) |
| | | **(10,778,106)** | (17,881,725) |
| | | **98,261,442** | 88,399,170 |
| **9.1 DISBURSEMENTS DURING THE YEAR** | | | |
| Institutional support | | **699,752** | - |
| Biotech sciences | | **797,839** | 2,335,968 |
| Evaluation fee | | **445,300** | 158,400 |
| Physical sciences | | **2,487,583** | 2,032,975 |
| Chemical sciences | | **1,361,553** | 2,632,433 |
| Biological sciences | | **6,333,584** | 3,824,324 |
| Earth sciences | | **828,127** | 659,856 |
| Environmental sciences | | **1,251,017** | 2,567,739 |
| Engineering sciences | | **1,088,378** | 1,927,307 |
| Agricultural sciences | | **580,616** | 707,469 |
| Medical sciences | | **3,851,692** | 2,875,540 |
| Board/Committee meetings | | **457,326** | 566,479 |
| Utilization of results of research and transfer of technology and pilot plant study | | **457,611** | 476,589 |
| | | **20,640,378** | 20,765,079 |
| **9.2 PROJECTS COMPLETED DURING THE YEAR** | | | |
| Biotech sciences | | **3,579,134** | 2,793,883 |
| Agricultural sciences | | **1,960,775** | 3,971,367 |
| Chemical sciences | | **-** | 3,208,066 |
| Earth sciences | | **-** | 388,278 |
| Engineering | | **286,137** | 1,367,153 |
| Environmental sciences | | **-** | 1,310,001 |
| Physical sciences | | **-** | 2,578,451 |
| Natural gas pipelines integrity | | **-** | 1,539,647 |
| Biological sciences | | **2,610,269** | - |
| Utilization of results of research and transfer of technology and pilot plant study | | **739,413** | - |
| | | **9,175,728** | 17,156,846 |
| **9.3 EXPENSES FOR PROJECTS** | | | |
| Institutional support | | **699,752** | - |
| Board/committee meetings | | **457,326** | 566,479 |
| Evaluation fee | | **445,300** | 158,400 |
| | | **1,602,378** | 724,879 |

| | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|
| **10. ADVANCES** | | |
| Advances - staff | | |
| For vehicles | **417,293** | 352,299 |
| For cycle | **8,098** | 11,270 |
| To CMH Rawalpindi | **-** | 300,000 |
| | **425,391** | 663,569 |
| **11. CASH AND BANK BALANCES** | | |
| Cash in hand | **28,057** | 31,663 |
| Cash at bank - current account # 052-8 | **27,301** | 27,301 |
| PSF development fund - current accounts | **289,313** | 279,463 |
| Fair saving a/c # 13459-1 | **247,500** | 236,727 |
| Misc. fund saving a/c # 840-09 | **916,428** | 1,194,387 |
| ECO science foundation a/c # 41004-3 | **1,147** | - |
| | **1,509,746** | 1,769,541 |

11.1 Bank balances are net-off un-presented stale cheques amounting to Rs.8,732,007 (2008 Rs.22,543,324.)

| | | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|---|
| **12. STATUTORY SCIENTIFIC FUNCTIONS** | | | |
| Research support grant | 9.1 | **20,640,378** | 20,765,079 |
| Scientific societies and professional bodies | | **2,661,216** | 2,296,413 |
| Scientific conferences, meetings and seminars | | **630,185** | 1,001,000 |
| Operation of science caravan | | **10,656,728** | 8,540,608 |
| Science promotion activities | | **3,484,272** | 2,276,562 |
| Science fair | | **-** | 1,278,171 |
| Awards, prizes and fellowship | | **306,000** | 244,000 |
| Information, documentation, publication and library materials, Subscription to international organization and UNESCO coupons | | **96,008** | 117,904 |
| Science centre herbaria planteria | | **1,534,912** | 274,556 |
| | | **40,009,699** | 36,794,293 |

| | | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|---|
| **13. ADMINISTRATIVE EXPENSES** | | | |
| Salaries and other benefits | | **36,464,062** | 35,388,710 |
| Traveling | | **139,859** | 236,022 |
| House rent facility | | **7,577,359** | 7,387,903 |
| Ground rent to CDA | | **126,426** | 126,426 |
| Electricity, gas and water | | **1,005,399** | 748,280 |
| Communication | | **1,166,364** | 1,223,218 |
| Printing and stationery | | **299,083** | 557,818 |
| Vehicle running and maintenance | | **1,431,606** | 948,499 |
| Newspapers and magazines | | **79,395** | 95,747 |
| Liveries and uniforms | | **55,181** | 38,845 |
| Entertainment | | **116,416** | 169,858 |
| Repair and maintenance | | **1,054,431** | 829,771 |
| Audit fee | | **20,000** | - |
| Professional charges | | - | 106,660 |
| Staff welfare fund | | **300,000** | 700,000 |
| Advertisement and publicity | | **72,109** | 307,203 |
| Miscellaneous | | **99,074** | 192,414 |
| Unforeseen expenses | | - | 80,000 |
| Depreciation | 7.1 | **2,042,321** | 1,886,668 |
| Loss on sale of vehicles | | - | 4,369 |
| | | **52,049,085** | 51,028,411 |
| **14. PRIOR YEAR ADJUSTMENTS** | | | |
| Contingent expenses | | - | 49,034 |
| Debit balance written off | | **3,000** | - |
| Credit balance written back | | **9,850** | - |
| | | **12,850** | 49,034 |

**15. DATE OF AUTHORIZATION FOR ISSUE**

These financial statements have been authorized for issue on _____ by the Board of Trustees.

**16. FIGURES**

In these financial statements figures have been rounded off to the nearest rupee and of the previous year have been re-arranged and re-grouped wherever necessary to facilitate comparison.

Islamabad.

TRUSTEE

CHAIRMAN

# PAKISTAN MUSEUM OF NATURAL HISTORY
# FINANCIAL STATEMENTS
# JUNE 30, 2009

Amir Alam Khan & C
Chartered Accountan
55/1, Bank Road, Rawalpir
Tele: 5563483, 55632
Fax : 55173
E-mail: aakco@brain.net.

## AUDITORS' REPORT TO THE BOARD OF TRUSTEES

We have audited the annexed balance sheet of **Non-development account of Pakistan Museum of Natura History (PMNH)** as at June 30, 2009, the related income and expenditure account and cash flow statemer together with the notes forming part thereof, (here-in-after referred to as financial statements) for the year the ended and we state that we have obtained all the information and explanations which, to the best of ou knowledge and belief, were necessary for the purposes of our audit.

It is the responsibility of the management to establish and maintain a system of internal control, and prepare an present the above said financial statements in conformity with the approved accounting standards as applicabl in Pakistan. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with the auditing standards as applicable in Pakistan. These standard require that we plan and perform the audit to obtain reasonable assurance about whether the above said statements are free of any material misstatement. An audit include examining, on a test basis, evidence supporting the amounts and disclosures in the above said statements. An audit also includes assessing the accounting policies and significant estimates made by management, as well as, evaluating the overall presentation of the above said financial statements. We believe that our audit provides a reasonable basis for ou opinion and, after due verification, we report that:

The foundation has not charged depreciation on property, plant and equipment which is a contravention with the criteria mentioned in IAS-16 "Property , plant and equipment".

In our opinion, and to the best of our information and according to the explanation given to us except for above, these financial statements give the information as required and present fairly in all material respect the financial position of the **Non-development account of Pakistan Museum of Natural History (PMNH)** as at June 30. 2009 and of its surplus and cash flow for the year then ended in accordance with the approved accounting standards as applicable in Pakistan.

Rawalpindi,

(Amir Alam Khan & Co.)
Chartered Accountants
Habib Fakhruddin FCA

## PAKISTAN MUSEUM OF NATURAL HISTORY
## NON DEVELOPMENT ACCOUNT
## BALANCE SHEET AS AT JUNE 30, 2009

| | Note | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|---|
| **FUNDS** | | | |
| General fund | 3 | **8,592,469** | 8,222,619 |
| **NON-CURRENT ASSETS** | | | |
| Property, plant and equipment | 4 | **8,338,121** | 7,954,271 |
| Long term deposits - PIMS | | **250,000** | 250,000 |
| | | **8,588,121** | 8,204,271 |
| **CURRENT ASSETS** | | | |
| Advances, prepayments and other receivables | 5 | **4,348** | 18,348 |
| | | **8,592,469** | 8,222,619 |

The annexed notes from 1 to 8 form an integral part of these financial statements.

Islamabad,

ASSISTANT DIRECTOR
(Accounts)
Pakistan Museum of Natural History
Islamabad

DIRECTOR GENERAL
Director General
Pakistan Museum of Natural History
Garden Avenue, Islamabad.

PAKISTAN MUSEUM OF NATURAL HISTORY
NON DEVELOPMENT ACCOUNT
INCOME AND EXPENDITURE ACCOUNT
FOR THE YEAR ENDED JUNE 30, 2009

| | Note | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|---|
| **INCOME** | | | |
| **GRANT FROM FEDERAL GOVERNMENT** | | **50,550,000** | 43,573,000 |
| **EXPENDITURE** | 6 | **(50,150,150)** | (44,380,668) |
| **SURPLUS / (DEFICIT) OF INCOMES OVER EXPENDITURES** | | **399,850** | (807,668) |

The annexed notes from 1 to 8 form an integral part of these financial statements.

Islamabad,

ASSISTANT DIRECTOR
Assistant Director (Accounts)
Pakistan Museum of Natural History
Islamabad

DIRECTOR GENERAL

**PAKISTAN MUSEUM OF NATURAL HISTORY**
**NON DEVELOPMENT ACCOUNT**
**CASH FLOW STATEMENT**
**FOR THE YEAR ENDED JUNE 30, 2009**

| | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|
| **CASH FLOWS FROM OPERATING ACTIVITIES** | | |
| Surplus/(deficit) before working capital changes | 399,850 | (807,668) |
| **Working capital changes** | | |
| **(Increase)/ Decrease in current assets:** | | |
| Advances, prepayments and other receivables | 14,000 | 1,211,397 |
| **Increase/ (Decrease) in current liabilities:** | | |
| Accrued and other liabilities | - | (175,101) |
| Net working capital charges | 14,000 | 1,036,296 |
| Net cash generated from operating activities | 413,850 | 228,628 |
| **CASH FLOWS FROM INVESTING ACTIVITIES** | | |
| Property, plant and equipment | (383,850) | (228,628) |
| Net cash used in investing activities | (383,850) | (228,628) |
| **CASH FLOWS FROM FINANCING ACTIVITIES** | | |
| General fund | (30,000) | - |
| Net cash (used in)/ from financing activities | (30,000) | - |
| **NET INCREASE IN CASH AND CASH EQUIVALENTS** | - | - |
| **CASH AND CASH EQUIVALENTS AT BEGINNING OF THE YEAR** | - | - |
| **CASH AND CASH EQUIVALENTS AT END OF THE YEAR** | - | - |

The annexed notes from 1 to 8 form an integral part of these financial statements.

Islamabad,

ASSISTANT DIRECTOR

DIRECTOR GENERAL

Pakistan Museum of Natural History
Garden Avenue, Islamabad

PAKISTAN MUSEUM OF NATURAL HISTORY
NON DEVELOPMENT ACCOUNT
NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED JUNE 30, 2009

## 1. BACKGROUND AND OBJECTIVE

Pakistan Museum of Natural History (PMNH) is a science center of Pakistan Science Foundation (PSF) established under Pakistan Science Foundation Act 1973, with an objective of promoting and financing scientific activities having a bearing on socio-economic needs of country. Main objective of PMNH is to establish a Museum of Natural History.

## 2. SIGNIFICANT ACCOUNTING POLICIES

The principal accounting policies which have been adopted in the preparation of these financial statements are summarized as under:

### 2.1 ACCOUNTING CONVENTION

These financial statements have been prepared under the historical cost convention.

### 2.2 BASIS OF PREPARATION

These financial statements have been prepared under cash receipt and payment method of accounting.

### 2.3 PROPERTY, PLANT AND EQUIPMENT

These are stated at cost. No depreciation is charged.

## 3. GENERAL FUND

| | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|
| Opening balance | **8,222,619** | 9,030,287 |
| Transfer to government of Pakistan | **(30,000)** | - |
| Surplus/ (Deficit) for the year | **399,850** | (807,668) |
| | **8,592,469** | 8,222,619 |

## 4. PROPERTY, PLANT AND EQUIPMENT

| PARTICULARS | COST | | | |
|---|---|---|---|---|
| | AS AT JULY 01, 2008 | ADDITIONS | DELETIONS | AS AT JUNE 30,2009 |
| Land | 1,050,000 | - | - | 1,050,000 |
| Machinery | 1,139,751 | - | - | 1,139,751 |
| Motor vehicles | 727,950 | 905,000 | 252,160 | 1,380,790 |
| Furniture and fixture | 1,384,270 | 21,369 | 101,390 | 1,304,249 |
| Office laboratory equipments | 2,965,090 | 94,020 | 258,624 | 2,800,486 |
| Computer equipments | 193,295 | - | 40,390 | 152,905 |
| Books | 468,915 | 16,025 | - | 484,940 |
| Whales and elephant skeleton | 25,000 | - | - | 25,000 |
| 2009 - Rupees | 7,954,271 | 1,036,414 | 652,564 | 8,338,121 |
| 2008 - Rupees | 7,725,643 | 228,628 | - | 7,954,271 |

## 5. ADVANCES, PREPAYMENTS AND OTHER RECEIVABLES

| | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|
| Recoverable advances | 3,120 | 3,120 |
| Advance for vehicle - (Receivable from UBL A/C # CD-70) | 1,228 | 15,228 |
| | 4,348 | 18,348 |

| | 2009 (Rupees) | 2008 (Rupees) |
|---|---|---|
| **6. EXPENDITURE** | | |
| Pay and allowances | **23,215,502** | 20,962,854 |
| Overtime allowance | **52,233** | 96,237 |
| Rent of Residential accommodation | **7,159,092** | 7,277,894 |
| Medical expenses | **2,435,079** | 1,938,819 |
| CPF contribution | **33,683** | 27,017 |
| GLI contribution | **57,547** | 48,470 |
| Gratuity | **34,200** | - |
| Pension contribution | **10,133,748** | 8,266,171 |
| Leave encasement | **117,294** | - |
| Contingency of staff | **212,450** | - |
| Ground rent | **6,050** | 6,050 |
| Travelling expenses | **104,260** | 33,771 |
| Repair and maintenance | **1,030,094** | 1,012,292 |
| Communication | **679,582** | 553,080 |
| Printing and stationery | **173,593** | 191,509 |
| Consumable stores | **242,934** | 209,837 |
| Electricity, gas and water | **740,226** | 886,598 |
| Entertainment | **132,525** | 74,765 |
| Staff welfare fund | **150,000** | 100,000 |
| Vehicle running (POL) | **739,067** | 708,597 |
| Uniform expenses | **26,074** | 28,475 |
| Audit fee | **12,500** | - |
| Advertisement | **163,436** | 286,565 |
| Newspapers and magazines | **48,740** | 42,241 |
| Other function/research activity | **1,529,338** | 1,551,100 |
| Compensation to deceased employees | **200,000** | - |
| Loss on sale of assets | **622,564** | - |
| Miscellaneous expenses | **98,339** | 78,326 |
| | **50,150,150** | 44,380,668 |

**7. DATE OF AUTHORIZATION FOR ISSUE**

These financial statements have been authorised for issue on _____ by the Board of Trustees.

**8. FIGURES**

In these financial statements figures have been rounded off to the nearest rupee and of the previous year have been re-arranged and re-grouped wherever necessary to facilitate comparison.

Islamabad,

ASSISTANT DIRECTOR

DIRECTOR GENERAL

## PAKISTAN MUSEUM OF NATURAL HISTORY
## DEVELOPMENT ACCOUNT
## BALANCE SHEET AS AT JUNE 30, 2009

| | Note | 2009 (Rupees) | Restated 2008 (Rupees) |
|---|---|---|---|
| **FUNDS AND GRANTS** | | | |
| General fund | 3 | **132,747,138** | 130,713,719 |
| Pakistan science foundation grant | 4 | **200,000** | 200,000 |
| Japanese grant | 5 | **15,719,500** | 15,719,500 |
| | | **148,666,638** | 146,633,219 |
| **NON-CURRENT ASSETS** | | | |
| Property, plant and equipment | 6 | **148,666,249** | 146,632,830 |
| **CURRENT ASSETS** | | | |
| Cash and bank balances | 7 | **389** | 389 |
| | | **148,666,638** | 146,633,219 |

The annexed notes from 1 to 10 form an integral part of these financial statements

Islamabad,

ASSISTANT DIRECTOR

DIRECTOR GENERAL

## PAKISTAN MUSEUM OF NATURAL HISTORY
## DEVELOPMENT ACCOUNT
## INCOME AND EXPENDITURE ACCOUNT
## FOR THE YEAR ENDED JUNE 30, 2009

| | Note | 2009 (Rupees) | Restated 2008 (Rupees) |
|---|---|---|---|
| **INCOME** | | | |
| GRANT FROM FEDERAL GOVERNMENT | | **3,672,000** | 3,638,000 |
| | | **3,672,000** | 3,638,000 |
| **EXPENDITURE** | 8 | **(1,588,581)** | (3,638,000 |
| **SURPLUS OF INCOMES OVER EXPENDITURES** | | **2,083,419** | - |

The annexed notes from 1 to 10 form an integral part of these financial statements.

Islamabad,

ASSISTANT DIRECTOR

DIRECTOR GENERAL

## PAKISTAN MUSEUM OF NATURAL HISTORY
## DEVELOPMENT ACCOUNT
## CASH FLOW STATEMENT
## FOR THE YEAR ENDED JUNE 30, 2009

| | 2009 (Rupees) | Restated 2008 (Rupees) |
|---|---|---|
| **CASH FLOWS FROM OPERATING ACTIVITIES** | | |
| Surplus before working capital changes | 2,083,419 | - |
| **Working capital changes** | | |
| (Increase)/ Decrease in current assets: | | - |
| Advances | - | 7,841,000 |
| Increase/ (Decrease) in current liabilities | - | - |
| Net working capital charges | - | 7,841,000 |
| Net cash generated from operating activities | 2,083,419 | 7,841,000 |
| **CASH FLOWS FROM INVESTING ACTIVITIES** | | |
| Property, plant and equipment | (2,033,419) | (7,841,000) |
| Net cash used in investing activities | (2,033,419) | (7,841,000) |
| **CASH FLOWS FROM FINANCING ACTIVITIES** | | |
| General fund | (50,000) | - |
| Net cash used in financing activities | (50,000) | - |
| **NET INCREASE IN CASH AND CASH EQUIVALENTS** | - | - |
| **CASH AND CASH EQUIVALENTS AT BEGINNING OF THE YEAR** | 389 | 389 |
| **CASH AND CASH EQUIVALENTS AT END OF THE YEAR** | 389 | 389 |

The annexed notes from 1 to 10 form an integral part of these financial statements

Islamabad,

ASSISTANT DIRECTOR

(Accounts)
History

DIRECTOR GENERAL

## PAKISTAN MUSEUM OF NATURAL HISTORY
## DEVELOPMENT ACCOUNT
## NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED JUNE 30, 2009

### 1. BACKGROUND AND OBJECTIVE

Pakistan Museum of Natural History (PMNH) is a science center of Pakistan Science Foundation (PSF) established under Pakistan Science Foundation Act 1973, with an objective of promoting and financing scientific activities having a bearing on socio-economic needs of country. Main objective of PMNH is to establish a Museum of Natural History.

### 2. SIGNIFICANT ACCOUNTING POLICIES

The principal accounting policies which have been adopted in the preparation of these financial statements are summarized as under:

#### 2.1 ACCOUNTING CONVENTION

These financial statements have been prepared under the historical cost convention

#### 2.2 BASIS OF PREPARATION

These financial statements have been prepared under cash receipt and payment method of accounting.

#### 2.3 PROPERTY, PLANT AND EQUIPMENT

These are stated at cost. No depreciation is charged.

| | | 2009 (Rupees) | Restated 2008 (Rupees) |
|---|---|---|---|
| **3. GENERAL FUND** | | | |
| Opening balance | | **130,713,719** | 127,075,719 |
| Transfer to government of Pakistan | | **(50,000)** | - |
| Surplus for the year | | **2,083,419** | - |
| Effect of restatement | 3.1 | **-** | 3,638,000 |
| | | **132,747,138** | 130,713,719 |

3.1 This represents expenditure of capital nature wrongly debited to income and expenditure account

### 4. PAKISTAN SCIENCE FOUNDATION GRANT

This represents the grant from Pakistan Science Foundation for the establishment of display centre received during 1998-1999.

### 5. JAPANESE GRANT

This represents the cultural grant assistance from Government of Japan received during financial year 1994-1995.

## 6. PROPERTY, PLANT AND EQUIPMENT

| PARTICULARS | COST | | | |
|---|---|---|---|---|
| | AS AT JULY 01, 2008 | ADDITIONS | DELETIONS | AS AT JUNE 30,2009 |
| Land | 2,576,000 | - | - | 2,576,00 |
| Building | 87,150,893 | - | - | 87,150,89 |
| Motor vehicles | 6,038,247 | - | 346,800 | 5,691,44 |
| Display centre | 8,168,351 | 2,202,000 | - | 10,370,35 |
| Generator | 8,990 | - | - | 8,99 |
| Audio visual equipment | 13,235,840 | - | - | 13,235,84 |
| Laboratory equipment | 12,104,709 | - | 325,806 | 11,778,90 |
| Computer equipments | 11,128,549 | - | 303,325 | 10,825,22 |
| Books | 4,242,784 | - | - | 4,242,78 |
| Furniture and fixture | 1,978,467 | - | 110,500 | 1,867,96 |
| Air conditoners | - | 917,850 | - | 917,85 |
| **2009 - Rupees** | **146,632,830** | **3,119,850** | **1,086,431** | **148,666,24** |
| 2008 - Rupees - restated | 135,153,830 | 11,479,000 | - | 146,632,83 |

7. This represents unutilised portion of advance refunded by the construction consultant deposited in UBL CD-7 account.

| | 2009 (Rupees) | Restated 2008 (Rupees) |
|---|---|---|
| **8. EXPENDITURE** | | |
| Consultancy fee | **330,058** | - |
| Honorarium | **128,632** | - |
| Loss on sale of fixed assets | **1,036,431** | - |
| Miscellaneous | **82,621** | - |
| Tender advertisement | **10,839** | - |
| | **1,588,581** | - |

## 9. DATE OF AUTHORIZATION FOR ISSUE

These financial statements have been authorised for issue on _____ by the Board of Trustees.

## 10. FIGURES

In these financial statements figures have been rounded off to the nearest rupee and of the previous year have been re-arranged and re-grouped wherever necessary to facilitate comparison.

Islamabad,

ASSISTANT DIRECTOR

DIRECTOR GENERAL

## PAKISTAN MUSEUM OF NATURAL HISTORY
## MISCELLANEOUS FUNDS (UBL ACCOUNT # CD-70)
## RECIEPT AND PAYMENT ACCOUNT FOR THE YEAR ENDED JUNE 30, 2009

| | 2009 RUPEES | 2008 RUPEES |
|---|---|---|
| **OPENING BALANCE - CASH AT BANK** | 698,223 | 793,444 |
| **RECEIPTS** | | |
| Miscellaneous | 21,447 | 96,044 |
| | 719,670 | 889,488 |
| **PAYMENTS** | | |
| Misc. expenses | 20,182 | 86,265 |
| PSF BIO project | 73,640 | 105,000 |
| Development tender fee | 2,000 | - |
| | 95,822 | 191,265 |
| **CLOSING BALANCE - CASH AT BANK** | 623,848 | 698,223 |

Islamabad,

ASSISTANT DIRECTOR

DIRECTOR GENERAL

PAKISTAN MUSEUM OF NATURAL HISTORY
STATEMENT OF MISCELLANEOUS FUNDS (UBL ACCOUNT # CD-70) RECEIPT AND PAYMENT
FOR THE YEAR ENDED JUNE 30, 2009

| PMNH DEVELOPMENT FUND | OPENING BALANCE | FUNDS RECEIVED DURING THE YEAR | EXPENDITURES INCURED DURING THE YEAR | TRANSFERS MADE DURING THE YEAR | CLOSING BALANCE |
|---|---|---|---|---|---|
| D.C | 389 | - | - | - | 389 |
| SMALL MAMAL | 13,296 | - | - | (13,296) | - |
| GEO | 8,807 | - | - | - | 8,807 |
| FOCUS BALUCH | 4,115 | - | - | (4,115) | - |
| SUMPO ADV TEC | 4 | | - | (4) | - |
| UNESCO W.SHOP | 76,288 | - | - | - | 76,288 |
| MISCELLANEOUS | 29,932 | 21,447 | (20,182) | - | 31,197 |
| DEV.TEND FEE | 2,000 | - | (2,000) | - | - |
| SECURITY DEP.CANT | 3,000 | | - | - | 3,000 |
| S.C FAISALABAD | (22,789) | - | - | 22,789 | - |
| S&T CONSUL. PROG. | 134,259 | - | - | (134,259) | - |
| C.L.C LOAN | (11,900) | - | - | 11,900 | - |
| PMNH CONSUL | 75,614 | - | - | 121,413 | 197,027 |
| STAT C. AREA | 500 | - | | (500) | - |
| PSF BIO 2680 | 380,780 | - | (73,640) | - | 307,140 |
| REPAIR OF VEHICLE | - | - | - | - | - |
| FOCUS BALOCH | 680 | - | - | (680) | - |
| PCST PROGRAM | 3,248 | - | - | (3,248) | - |
| TOTAL | 698,223 | 21,447 | (95,822) | - | 623,848 |

Islamabad,

ASSISTANT DIRECTOR

DIRECTOR GENERAL

**PAKISTAN MUSEUM OF NATURAL HISTORY**
**STATEMENT OF MISCELLANEOUS FUNDS (UBL ACCOUNT # CD-70) RECEIPT AND EXPENDITURES**
**FOR THE YEAR ENDED JUNE 30, 2009**

| PMNH DEVELOPMENT FUND | D.C | SMALL MAMAL | GEO | FOCUS BALUCH | SUMPO ADV TEC | UNESCO W SHOP | GPF LOAN | MISC. EXPENSES | DEV.TEND FEE | SECURITY DEP.CANT | S.C FAISALABAD | S&T CONSUL PROG. | C.L.C LOAN | PMNH CONSUL | STAT C. AREA | PSF BIO 2680 | REPAIR OF VEHICLE | FOCUS BALOCH | PCST PROGRAM | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Rupees | | | | | | | | | | | | | | | | | | | |
| OPENING BALANCE | 389 | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | | [illegible] | 2,000 | 3,000 | (22,789) | 134,259 | (11,900) | 70,994 | 500 | 380,780 | - | [illegible] | [illegible] | 698,223 |
| ADD: FUNDS RECEIVED DURING THE YEAR | | | | - | | | | [illegible] | - | | - | | | | | | - | | - | 21,447 |
| FUNDS TRANSFERRED DURING THE YEAR | | [illegible] | - | [illegible] | [illegible] | | | | | - | 22,789 | (134,259) | 11,900 | [illegible] | (500) | - | - | [illegible] | [illegible] | |
| | 389 | - | 8,807 | - | - | 76,288 | | 55,999 | 2,000 | 3,000 | - | - | - | 192,407 | - | 380,780 | - | | | 719,670 |
| **EXPENDITURE** | | | | | | | | | | | | | | | | | | | | |
| Miscellaneous | | | - | | | | | 20,182 | - | - | - | - | | - | - | - | - | | | 20,182 |
| Development tender fee | | | - | - | | | | - | 2,000 | - | - | | | | - | | | | | 2,000 |
| PSF bio project | - | - | - | - | | | | | - | - | | - | - | - | - | 73,640 | - | | | 73,640 |
| TOTAL | | - | - | - | - | | | 20,182 | 2,000 | - | - | - | - | - | - | 73,640 | - | - | - | 95,822 |
| **CLOSING BALANCE** | 389 | - | 8,807 | - | | 76,288 | - | 35,817 | - | 3,000 | - | - | | 192,407 | - | 307,140 | - | - | | 623,848 |

Islamabad.

ASSISTANT DIRECTOR

DIRECTOR GENERAL
Director General

# PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
# FINANCIAL STATEMENTS
# JUNE 30, 2009

Amir Alam Khan & Co.
Chartered Accountants
55/1, Bank Road, Rawalpindi
Tele: 5563483, 5563256
Fax : 5517358
E-mail: aakco@brain.net.pk

## AUDITORS' REPORT TO THE BOARD OF TRUSTEES

We have audited the annexed consolidated receipt and payment account of **Non-development account of Pakistan Scientific and Technological Information Centre (PASTIC)** for the year ended as at June 30, 2009, and we state that we have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of our audit

It is the responsibility of the management to establish and maintain a system of internal control, and prepare and present the above said receipt and payment account in conformity with the approved accounting standards as applicable in Pakistan. Our responsibility is to express an opinion on this receipt and payment account based on our audit.

We conducted our audit in accordance with the auditing standards as applicable in Pakistan. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the above said receipt and payment account is free of any material misstatement. An audit include examining, on a test basis, evidence supporting the amounts and disclosures in the above said receipt and payment account. An audit also includes assessing the accounting policies and significant estimates made by management, as well as, evaluating the overall presentation of the above said receipt and payment account. We believe that our audit provides a reasonable basis for our opinion and, after due verification, we report that:

In our opinion, and to the best of our information and according to the explanation given to us, this receipt and payment account give the information as required and present fairly in all material respect the receipts and payments of the **Non-development account of Pakistan Scientific and Technological Information Centre (PASTIC)** during the year ended as at June 30, 2009, in accordance with the approved accounting standards as applicable in Pakistan

awalpindi,

(Amir Alam Khan & Co.)
Chartered Accountants
Habib Fakhruddin FCA

PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
CONSOLIDATED RECEIPTS AND PAYMENTS ACCOUNT (NON-DEVELOPMENT)
FOR THE YEAR ENDED JUNE 30, 2009

| | 2009 RUPEES | 2008 RUPEES |
|---|---|---|
| **RECEIPTS** | | |
| Government grants | 52,000,000 | 40,626,000 |
| | 52,000,000 | 40,626,000 |
| **PAYMENTS** | | |
| Salaries, and allowances | 23,330,522 | 18,997,645 |
| House rent | 6,354,221 | 5,534,332 |
| Printing, stationery and consumable stores | 948,796 | 759,840 |
| Newspaper | 620,274 | 715,021 |
| Entertainment | 42,631 | 34,951 |
| Postage, telegrams and telephone | 790,580 | 545,895 |
| Electricity, water and gas | 771,299 | 832,442 |
| Vehicle running expenses | 681,752 | 900,023 |
| Traveling and conveyance | 124,651 | 55,833 |
| Medical charges | 5,056,835 | 2,737,388 |
| Advertisement | 262,341 | 173,804 |
| Repair and maintenance-office equipment | 158,703 | 216,820 |
| Repair and maintenance-transport | 391,262 | - |
| Repair and maintenance-furniture & fixtures | 32,715 | 11,860 |
| Repair and maintenance-building | 285,899 | 294,060 |
| Computer expenses | 232,982 | 558,250 |
| Staff welfare funds | 307,335 | 161,720 |
| Bank charges and others | 18,841 | 19,851 |
| Conferences, seminar & workshops | 532,229 | 413,780 |
| Audit fee / legal charges | 12,500 | 37,500 |
| Rent Office building | 342,000 | 246,000 |
| Purchase of transport | 2,359,000 | - |
| Purchase of plant and machinery | - | 27,460 |
| Purchase of furniture & fixtures | 2,100 | 78,527 |
| Data bases, journals and annual subscriptions | 1,433,000 | 900,138 |
| National bureau TIPS | 997,487 | 1,039,950 |
| Pension contribution | 5,225,750 | 4,073,529 |
| Foreign expert assistance | 600,000 | 1,200,000 |
| Miscellaneous | 84,295 | 59,381 |
| | 52,000,000 | 40,626,000 |
| **EXCESS OF RECEIPTS OVER PAYMENTS** | - | - |

Islamabad,

DIRECTOR GENERAL
DR. MANZOOR HUSSAIN SOOMRO
Director General
PASTIC National Center,
Quaid-i-Azam University Campus,
Islamabad

ADDITIONAL DIRECTOR (ADMIN)
MALIK KHALID MEHMOOD
Additional Director (Admin)
Pastic National Centre
Islamabad

ASSISTANT DIRECTOR (ACCOUNTS)
GHAFFAR AHMAD
Asstt. Director (Accts.)
PASTIC National Centre
Islamabad

**PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE**
**CONSOLIDATED RECEIPTS AND PAYMENTS ACCOUNT (NON-DEVELOPMENT)**
**FOR THE YEAR ENDED JUNE 30, 2009**

| PARTICULARS | ISLAMABAD RUPEES | KARACHI RUPEES | LAHORE RUPEES | PESHAWAR RUPEES | QUETTA RUPEES | FAISALABAD RUPEES | MUZAFARABAD RUPEES | 2009 RUPEES | 2008 RUPEES |
|---|---|---|---|---|---|---|---|---|---|
| **RECEIPTS** | | | | | | | | | |
| Government grant | 52,000,000 | - | - | - | - | - | - | **52,000,000** | 40,626,000 |
| Transferred to sub-centres | (9,089,516) | 3,765,350 | 1,580,460 | 1,427,792 | 982,823 | 826,748 | 506,343 | - | - |
| | 42 910,484 | 3,765,350 | 1,580,460 | 1,427 792 | 982,823 | 826,748 | 506,343 | **52,000,000** | 40,626,000 |
| **PAYMENTS** | | | | | | | | | |
| Salaries and allowances | 18,236,877 | 2,276,715 | 774,045 | 879,999 | 460,022 | 393,291 | 309 573 | **23,330,522** | 18,997,645 |
| House rent (residential) | 5,151,661 | 657,068 | 54,152 | 174,385 | 118,140 | 76,970 | 121,845 | **6,354,221** | 5,534,332 |
| Printing and stationery | 899,436 | 7,023 | 7,634 | 9,650 | 8,453 | 11,622 | 4,968 | **948,796** | 759,840 |
| Newspapers/books/journals | 596,780 | 9,502 | 1,717 | 4,411 | 4,734 | 3,130 | - | **620,274** | 715,021 |
| Entertainment | 30,102 | 1,281 | 2,844 | 1,825 | 1,000 | 3,954 | 1,625 | **42,631** | 34,951 |
| Communication | 591,684 | 41,148 | 33,985 | 57,840 | 11,104 | 40,555 | 14 264 | **790,580** | 545,895 |
| Electricity, water and gas | 652,278 | 50,612 | 30,834 | 16,522 | 20,853 | - | - | **771,299** | 832,442 |
| Vehicle running/pol charges | 601,620 | 28,062 | 20,969 | 23,915 | 7,185 | - | - | **681,752** | 900,023 |
| Traveling and conveyance | 106,700 | 1,995 | 3,547 | 7,635 | - | 3,804 | 970 | **124,651** | 55,833 |
| Medical charges | 3,838,795 | 392,752 | 567,249 | 123,674 | 68,365 | 33,000 | 33 000 | **5,056,835** | 2,737,388 |
| Advertisement | 262 341 | - | - | - | - | - | - | **262,341** | 173,804 |
| Repair and maintenance | | | | | | | | | |
| -Office equipment | 96,142 | 10,776 | 25,685 | 11,900 | 3,150 | 11,050 | - | **158,703** | 216,820 |
| -Transport | 321,104 | 13,239 | 11,119 | 42,200 | 3,600 | - | - | **391,262** | - |
| -Furniture and fixtures | 23,504 | - | - | - | - | 9,211 | - | **32,715** | 11,860 |
| -Building | 241,467 | 1,636 | 1,300 | 16,670 | 3,606 | 21,220 | - | **285,899** | 294,060 |
| Computer expenses | 178,307 | 2,320 | 9,365 | 10,820 | 10 660 | 11,230 | 10,280 | **232,982** | 558,250 |
| Staff welfare fund/uniforms/liveries | 305,605 | - | 900 | 830 | - | - | - | **307,335** | 161,720 |
| Bank charges | 2,681 | 4,701 | 2,214 | 2,785 | 1 618 | 2,639 | 2,203 | **18,841** | 19,851 |
| Conference, seminars and workshops | 171,918 | 101,489 | 15,324 | 29,771 | 10,150 | 201,177 | 2,400 | **532,229** | 413,780 |
| Audit fee/ legal charges | 12,500 | - | - | - | - | - | - | **12,500** | 37,500 |
| Rent- office building | - | 102,000 | - | - | 240 000 | - | - | **342,000** | 246,000 |
| Purchase of office equipment | - | - | - | - | - | - | - | - | - |
| Purchase of office transport | 2,359 000 | - | - | - | - | - | - | **2,359,000** | - |
| Purchase of plant and machinery | - | - | - | - | - | - | - | - | 27,460 |
| Purchase of furniture and fixtures | - | - | - | 2,100 | - | - | - | **2,100** | 78,527 |
| Advances to staff | - | - | - | - | - | - | - | - | - |
| Data bases, journals and annual subscription | 1,433 000 | - | - | - | - | - | - | **1,433,000** | 900,138 |
| National Bureau TIPS | 933,527 | 62,185 | - | 1,775 | - | - | - | **997,487** | 1,039,950 |
| Pension contribution | 5,225 750 | - | - | - | - | - | - | **5,225,750** | 4,073,529 |
| Foreign expert assistance | 600 000 | - | - | - | - | - | - | **600,000** | 1,200,000 |
| Miscellaneous/fertilizers/unforeseen expenses | 37 705 | 646 | 17,577 | 9,085 | 10 172 | 3,895 | 5 215 | **84,295** | 59,381 |
| | 42 910,484 | 3 765 350 | 1 580,460 | 1,427,792 | 982 323 | 826,748 | 506 343 | **52,000,000** | 40,626,000 |

**PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE**
**CONSOLIDATED RECEIPTS AND PAYMENTS ACCOUNT (NON-DEVELOPMENT)**
**FOR THE YEAR ENDED JUNE 30, 2009**

| PARTICULARS | ISLAMABAD RUPEES | KARACHI RUPEES | LAHORE RUPEES | PESHAWER RUPEES | QUETA RUPEES | FAISALABAD RUPEES | MUZAFARABAD RUPEES | 2009 RUPEES | 2008 RUPEES |
|---|---|---|---|---|---|---|---|---|---|
| Excess of receipts over payments | - | - | - | - | - | - | - | - | - |
| **Add-Opening balances** | | | | | | | | | |
| Cash in hand | - | - | - | - | - | - | - | - | - |
| Cash at bank | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - |
| **Represented by:** | | | | | | | | | |
| **Closing balance of** | | | | | | | | | |
| Cash in hand | - | - | - | - | - | - | - | - | - |
| Cash at bank | - | - | - | - | - | - | - | - | - |
| | - | - | - | - | - | - | - | - | - |

Islamabad,

DIRECTOR GENERAL
DR. MANZOOR HUSSAIN SOOMRO
Director General
PASTIC National Center,
Quaid-i-Azam University Campus,
Islamabad

ADDITIONAL DIRECTOR (ADMIN)
MALIK KHALID MEHMOOD
Additional Director (Admin)
Pastic National Centre
Islamabad

ASSISTANT DIRECTOR (ACCOUNTS)
24/3/10
GHAFFAR AHMAD
Asstt. Director (Accounts)
PASTIC National Centre
Q.A.U. Campus, Islamabad

Amir Alam Khan & Co.
Chartered Accountants
55/1, Bank Road, Rawalpindi
Tele: 5563483, 5563256
Fax : 5517358
E-mail: aakco@brain.net.pk

## AUDITORS' REPORT TO THE BOARD OF TRUSTEES

We have audited the annexed consolidated receipt and payment account of **Reprographic and documentation account of Pakistan Scientific and Technological Information Centre (PASTIC)** for the year ended as at June 30, 2009, and we state that we have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of our audit.

It is the responsibility of the management to establish and maintain a system of internal control, and prepare and present the above said receipt and payment account in conformity with the approved accounting standards as applicable in Pakistan. Our responsibility is to express an opinion on this receipt and payment account based on our audit.

We conducted our audit in accordance with the auditing standards as applicable in Pakistan. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the above said receipt and payment account is free of any material misstatement. An audit include examining, on a test basis, evidence supporting the amounts and disclosures in the above said receipt and payment account. An audit also includes assessing the accounting policies and significant estimates made by management, as well as, evaluating the overall presentation of the above said receipt and payment account. We believe that our audit provides a reasonable basis for our opinion and, after due verification, we report that:

In our opinion, and to the best of our information and according to the explanation given to us, this receipt and payment account give the information as required and present fairly in all material respect the receipts and payments of the **Reprographic and documentation account of Pakistan Scientific and Technological Information Centre (PASTIC)** during the year ended as at June 30, 2009, in accordance with the approved accounting standards as applicable in Pakistan.

Rawalpindi,

(Amir Alam Khan & Co.)
Chartered Accountants
Habib Fakhruddin FCA

## PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
## CONSOLIDATED RECEIPTS AND PAYMENTS ACCOUNT (REPROGRAPHIC AND DOCUMENTATION)
## FOR THE YEAR ENDED JUNE 30, 2009

| | 2009 RUPEES | 2008 RUPEES |
|---|---|---|
| **OPENING BALANCE** | | |
| **Cash at bank** | | |
| Reprography | 2,184,159 | 3,145,397 |
| Documentation | 739,427 | 441,882 |
| | 2,923,586 | 3,587,279 |
| **RECEIPTS** | | |
| Reprography | 4,276,236 | 2,970,553 |
| Documentation | 767,777 | 298,509 |
| Profit on bank account | 65,045 | 26,243 |
| Transferred from sub-centres | 123,640 | 204,120 |
| | 5,232,698 | 3,499,425 |
| **PAYMENTS** | | |
| Reprography | 3,431,015 | 3,958,034 |
| Documentation expenses | 600,526 | - |
| Bank charges | 282 | 964 |
| Transferred to head office | 123,640 | 204,120 |
| | 4,155,463 | 4,163,118 |
| **CLOSING BALANCES** | | |
| **Cash at bank** | | |
| Reprography | 3,094,425 | 2,184,159 |
| Documentation | 906,396 | 739,427 |
| | 4,000,821 | 2,923,586 |

Islamabad,

DIRECTOR GENERAL

DR. MANZOOR HUSSAIN SOOMRO
Director General
PASTIC National Center,
Quaid-i-Azam University Campus,
Islamabad

ADDITIONAL DIRECTOR (ADMIN)

MALIK KHALID MEHMOOD
Additional Director (Admin)
Pastic National Centre
Islamabad

ASSISTANT DIRECTOR (ACCOUNTS)

24/3/10

CHAFFAR AHMAD
Asstt. Director (Accounts)
PASTIC National Centre

## PAKISTAN SCIENTIFIC AND TECHNOLOGICAL INFORMATION CENTRE
## CONSOLIDATED RECEIPTS AND PAYMENTS ACCOUNT (REPROGRAPHY)
## FOR THE YEAR ENDED JUNE 30, 2009

| PARTICULARS | ISLAMABAD RUPEES | KARACHI RUPEES | LAHORE RUPEES | PESHAWAR RUPEES | QUETTA RUPEES | FAISALABAD RUPEES | MUZAFARABAD RUPEES | 2009 RUPEES | 2008 RUPEES |
|---|---|---|---|---|---|---|---|---|---|
| **Opening balance** | | | | | | | | | |
| **Cash at bank** | | | | | | | | | |
| Reprography | 2,184,159 | - | - | - | - | - | - | 2,184,159 | 3,145,397 |
| Documentation | 714,810 | 10,249 | 8,313 | 6,055 | - | - | - | 739,427 | 441,882 |
| | 2,898,969 | 10,249 | 8,313 | 6,055 | - | - | - | 2,923,586 | 3,587,279 |
| **RECEIPTS** | | | | | | | | | |
| Reprography | 4,276,236 | - | - | - | - | - | - | 4,276,236 | 2,970,553 |
| Documentation | 659,034 | 64,360 | 28,510 | 7,733 | - | 8,140 | - | 767,777 | 298,509 |
| Profit on bank account | 65,045 | - | - | - | - | - | - | 65,045 | 26,243 |
| Transferred from sub-centers | 123,640 | - | - | - | - | - | - | 123,640 | 204,120 |
| | 5,123,955 | 64,360 | 28,510 | 7,733 | - | 8,140 | - | 5,232,698 | 3,499,425 |
| **PAYMENTS** | | | | | | | | | |
| Reprography | 3,431,015 | - | - | - | - | - | - | 3,431,015 | 3,958,034 |
| Documentation expenses | 600,526 | - | - | - | - | - | - | 600,526 | - |
| Bank charges | 125 | 157 | - | - | - | - | - | 282 | 964 |
| Transferred to head office | - | 72,000 | 35,000 | 8,500 | - | 8,140 | - | 123,640 | 204,120 |
| | 4,031,666 | 72,157 | 35,000 | 8,500 | - | 8,140 | - | 4,155,463 | 4,163,118 |
| **Closing balances** | | | | | | | | | |
| **Cash at bank** | | | | | | | | | |
| Reprography | 3,094,425 | - | - | - | - | - | - | 3,094,425 | 2,184,159 |
| Documentation | 896,833 | 2,452 | 1,823 | 5,288 | - | - | - | 906,396 | 739,427 |
| | 3,991,258 | 2,452 | 1,823 | 5,288 | - | - | - | 4,000,821 | 2,923,586 |

Islamabad.

DIRECTOR (USHER SOOMRO)
Director General
PASTIC National Center,
Quaid-i-Azam University Campus,
Islamabad

ADDITIONAL DIRECTOR (ADMIN)
MALIK KHALID MEHMOOD
Additional Director (Admin)
Pastic National Centre

ASSISTANT DIRECTOR (ACCOUNTS)
GHAFFAR AHMAD
Asstt: Director (Accounts)
PASTIC National Centre

# PAKISTAN SCIENCE FOUNDATION
# ACT-1973

**ANNEXURE-1**

# PAKISTAN SCIENCE FOUNDATION ACT 1973
## National Assembly of Pakistan Islamabad, the 2nd February 1973

The following Acts of the National Assembly received the assent of the President on the 31st January 1973 and hereby published for general information.

### Act No. III of 1973

*An Act to provide for the establishment of the Pakistan Science Foundation.*

Whereas it is expedient to provide for the establishment of the Pakistan Science Foundation and for matters ancillary there to,

It is hereby enacted as follows:-

1. **Short title, extent and commencement.** (1) This Act may be called the Pakistan Science Foundation Act, 1973.

   2) It extends to the whole of Pakistan

   3) It shall come into force at once.

2. **Definitions**. In this Act, unless there is anything repugnant in the subject or context.

   a) "Board" means the Board of Trustees of the Foundation;

   b) "Chairman": means the Chairman of the Foundation; and

   c) "Foundation" means the Pakistan Science Foundation established under this Act.

3. **Establishment of the Foundation**. (1) As soon as may be after the commencement of this Act, the Federal Government may, by notification in the official Gazette, establish a Pakistan Science Foundation to promote and finance scientific activities having a bearing on the socio-economic needs of the country.

(2) The Foundation shall be a body corporate by the name of the Pakistan Science Foundation, having perpetual succession and a common seal, with power, subject to the provision of this Act, to acquire, hold and dispose of property, both movable and immovable, and shall be the said name sue and be sued.

(3) The Head Office of the Foundation shall be at Islamabad.

4. **Functions of the Foundation: (1)** The Foundation shall function as a financing agency for

   i) The establishment of comprehensive scientific and technological information and dissemination centers;

ii) The promotion of basic and fundamental research in the universities and other institutions on scientific problems relevant to the socio-economic development of the country;

iii) The utilization of the results of scientific and technological research including pilot plant studies to prove the technical and economic feasibility of processes found to be promising on a laboratory scale;

iv) The establishment of science centers, clubs, museums, herbaria and planetaria,

v) The promotion of scientific societies, associations and academies engaged in spreading the cause of scientific knowledge in general or in the pursuit of a specific scientific discipline or technology in particular;

vi) The organization of periodical science conferences, symposia and seminars;

vii) The exchange of visits of scientists and technologists with other countries;

viii) The grant of awards, prizes and fellowships to individuals engaged in developing processes, products and inventions of consequence to the economy of the country; and

ix) Special scientific surveys not undertaken by any other organization and collection of scientific statistics related to the scientific effort of the country.

(2) The Foundation shall also:

i) Review the progress of scientific research sponsored by it and evaluate the results of such research;

ii) Maintain a National Register of highly qualified and talented scientists of Pakistan including engineers and doctors, in or outside the country and to assist them, in collaboration with the concerned agencies in finding appropriate employment; and

iii) Establish liaison with similar bodies in other countries.

(3) In the performance of its functions, the Foundation shall be guided on questions of policy by the instructions, if any, given to it by the Federal Government which shall be the sole judge as to whether a question is a question of policy.

5. **Board of Trustees.** (1) The general direction, conduct and management of the affairs of the Foundation, including administration of its funds, shall vest in a Board of Trustees consisting of the following members namely;

***Whole-time members***

i) the Chairman;

ii) one eminent scientist;

iii) the Director of Finance; to be appointed by the President;

***Part-time members***

iv) the Chairman of the National Science Council;

v) four scientists to be nominated by the National Science Council; and

vi) eleven eminent scientists to be nominated by the President

(2) The remuneration and other terms and conditions of service of the Chairman and the two other whole-time members of the Board shall be such as may be determined by the President.

6. **Chairman of the Board** (1) The Chairman of the Board shall be the Chairman of the Foundation and shall be appointed from amongst the eminent scientists of the country having experience of research and scientific administration.

(2) The Chairman shall, subject to sub-section (3), hold office for a term not exceeding three years and shall be eligible for re-appointment.

(3) The Presedent may at any time terminate the appointment of the Chairman without notice and without assigning any reason.

7. **Term of Members of the Board.** (1) The members of the Board, other than the ex-officio member, shall subject to sub-section (3), hold office for a term not exceeding three years and shall be eligible for re-appointment or re-nomination, as the case may be.

(2) A member, other than an ex-officio member, may at any time resign his office by writing under his hand addressed to the President but shall continue to perform his functions until his resignation has been accepted.

(3) The Presidnednt may at any time terminate the appointment or, as the case may be, nomination of any member of the Board without notice and without assigning any reason.

8. **Meetings of the Board.** (1) The meeting of thc Board shall be held at least twice a year and shall be presided over by the Chairman or, in his absence, by its whole-time scientist member.

(2) All decisions at a meeting of the Board shall be taken by a majority of the votes of the members present and voting.

9. **Quorum at the Meeting of the Board.** To constitute a quorum at a meeting of the Board not less than nine members shall be present.

10. **Executive Committee.** There shall be an Executive Committee consisting of the Chairman and the two whole-time members of the Board.

11. **Delegation of Powers.** The Board may, from time to time, delegate the Chairman or the Executive Committee such of its power and functions as it may consider necessary.

12. **Adhoc Committees.** The Foundation may set up adhoc committees consisting of university professors and other leading scientists and experts to scrutinize applications for financial assistance for carrying out scientific research submitted to the Foundation by the universities or other institutions or by individual scientific workers or groups of scientific workers and to review and evaluate the results of research sponsored by the Foundation.

---

(As amended vide Ordinance No. XIII of 1979, Published in the Gazette of Pakistan Extra, Feb 24, 1979) Part I,

13. **Funds.** The funds of the Foundation shall consist of:

a) Grants made by the Federal Government and the Provincial Governments;

b) Donation and endowments; and

c) Income from other sources

14. **Budget.** The Foundation shall cause to be prepared and approve a statement of its receipt and expenditure for each financial year.

15. **Accounts and Audit.** (1) The funds of the Foundation shall be kept in a personal ledger account of the Foundation with the State Bank of Pakistan or with any Branch of the National Bank of Pakistan acting as an agent of the State Bank.

(2) The accounts of the Foundation shall be maintained in such form and manner as the Auditor-General of Pakistan may determine in consultation with the Federal Government.

(3) The accounts of the Foundation shall be audited by one or more auditors who are chartered accountants with in the meaning of the Chartered Accountants Ordinance., 1961 (X of 1961) and are appointed by the Foundation in consultation with the Auditor-General of Pakistan.

16. **Appointment of Officers and Servants.** (1) The Foundation may appoint such officers and servants and engage such consultants or experts, as it may consider necessary for the efficient performance of its functions, on such terms and conditions as it may deem fit.

(2) In fixing the terms and conditions of service of its officers and servants, the Foundation shall, as nearly as may be, conform to the scales of pay, allowances and conditions of service applicable to the corresponding class of employees of the Federal Government.

17. **Annual Reports.** (1) The annual report of the Foundation, which shall among other things, clearly bring out the benefits accruing to the nation as a result of the activities sponsored by the Foundation, shall be prepared by the Chairman and submitted through the Board to the Federal Government alongwith the audited accounts of the Foundation.

(2) The annual report alongwith the audited accounts of the Foundation shall be laid before the National Assembly.

18. **Regulations.** The Foundation may make regulations for the efficient conduct of its affairs.

19. **Repeal.** The Pakistan Science Foundation Ordinance, 1972 (LII of 1972), is hereby repealed.

# LIST OF PROJECTS APPROVED DURING 2008-09

**ANNEXURE-II**

## LIST OF PROJECTS APPROVED DURING THE YEAR 2008-09

**A: Non-Development Budget**

| S. No. | Project Title &No. | Name & Address of PI | Sanctioned Cost (Rs.) |
|---|---|---|---|
| 1. | Preparation of in-vitro Passaged Live Attenuated Hydro-Pericardium Syndrome Virus (local isolates) Vaccine. **P-AU/Bio (367)** | Dr. Iftikhar Hussain Associate Professor Department of Veterinary Microbiology, University of Agriculture Faisalabad. | 951,570/- |
| 2. | Comparative characterization and recombinant study of indigenous keratinase enzymes. **S-SALU/Bio (382)** | Prof. Dr. Yesmeen Faiz Kazi Department of Microbiology Shah Abdul Latif University Khairpur. | 1,993,080/- |
| 3. | Effects of pesticides application and refugia on pest control potential of spider residing rice fields of Punjab, Pakistan. **P-PU/Bio (410)** | Dr. Abida Butt Assistant Professor Department of Zoology University of the Punjab Lahore. | 1,707,664/- |
| 4. | Evaluation of sugarcane polysaccharides and glycoprotein as biological response modifiers and their therapeutic effects on *Eimeria* infection in chickens. **P-AU/Bio (412)** | Dr. Masood Akhtar Associate Professor Department of Parasitology University of Agriculture Faisalabad. | 1,997,160/- |
| 5. | Estimation of aflatoxins in milk and its control measures. **P-UVAS/Bio (416)** | Prof. Dr. Makhdoom Abdul Jabbar Department of Food & Nutrition University of Veterinary and Animal Sciences Lahore. | 1,999,200/- |

| | | | |
|---|---|---|---|
| 6. | Ethnobotanical survey of Thal desert, Punjab, Pakistan. **P-PMASAAU/Bio (418)** | Dr. Rahmatullah Qureshi<br>Assistant Professor<br>Department of Botany<br>Pir Mehr Ali Shah Arid Agriculture University<br>Rawalpindi. | 1,783,980/- |
| 7. | Functional analysis of a proteinase inhibitor gene construct for insect resistance. **C-QU/Bio (419)** | Dr. Tariq Mahmood<br>Assistant Professor<br>Department of Plant Sciences<br>Quaid-i-Azam University<br>Islamabad. | 1,998,180/- |
| 8. | Ecology, status and management of fisheries in Mangla Dam. **P-PMASAAU/Bio (420)** | Dr. Muhammad Sajid Nadeem<br>Assistant Professor<br>Department of Zoology<br>Pir Mehr Ali Shah Arid Agriculture University<br>Rawalpindi. | 998,580/- |
| 9. | Isolation and Identification of Plant Growth Promoting $N_2$-Fixing Soil Bacteria Using Molecular Techniques for Improving Legume-Cereal Cropping System. **P-PMAS.AAU/Agr (374)** | Dr. Rifat Hayat<br>Lecturer<br>Department of Soil Science & SWC<br>Pir Mehr Ali Shah Arid Agriculture University<br>Rawalpindi. | 1,996,140/- |
| 10. | Exploration of Bacloviruses Prevalent in Different Agro-ecological Zones of Pakistan and Their Evaluation against Target Lepidopteron Pests. **P-CABI/Agr(380)** | Mr. Aamir Humayun Malik,<br>Biotechnology Specialist,<br>CABI South Asia Regional Centre<br>Rawalpindi | 1,771,399/- |
| 11. | Entomopathogenic Fungi and Diatomaceous Earths for the Control of *Tribolium castaneum* (Herbst.) (Coleoptera: Tenebrionidae) on Stored Wheat. **P-AU/Agr (381)** | Dr. Waqas Wakil,<br>Assistant Professor,<br>Department of Agri. Entomology<br>University of Agriculture<br>Faisalabad. | 1,987,980/- |
| 12. | Documentation of Predatory Spiders and Their Role in Suppression of Pests of Major | Prof. Dr. Rab Dino Khuhro,<br>Department of | 1,041,420/- |

| | | | |
|---|---|---|---|
| | Crops in Sindh.<br>**S-SAU/Agr(382)** | Entomology,<br>Sindh Agriculture University<br>Tandojam | |
| 13. | Using GIS Models for Design & Development of Effective Air Quality Management System.<br>**P-FJWU/Envr(92)** | Dr. Sheikh Saeed Ahmed<br>Assistant Professor<br>Deptt. Of Environmental Sciences<br>Fatima Jinnah Women University<br>Rawalpindi. | 1,275,010/- |
| 14. | Removal of Inorganic and Organic Pollutants from water/industrial wastes by Micellar Enhanced Ultra Filtration (MEUF).<br>**C-QAU/Envr(93)** | Dr. Syed Sakhawat Shah<br>Department of Chemistry<br>Quaid-e-Azam University<br>Islamabad. | 1293,230/- |
| 15. | Nonlinear Landau Damping in Space Plasmas with Non-Maxwellian Distribution Function.<br>**P-GCU/Phys.(143)** | Dr. M. Nouman Sarwar Qureshi<br>Assistant Professor<br>Department of Physics<br>Government College University<br>Lahore. | 475,320/- |
| 16. | Measurement of Dielectric Properties of Ceramics (Nano-Ferrites, R2Si2O7, R=Er, Ho).<br>**C-NUST/Phys (147)** | Prof. Dr. Asghari Maqsood<br>Meritorious Professor<br>Department of Materials Engg, NUST, Islamabad | 2,168,520/- |
| | | **Total** | **25,438,433/-** |

**B. Natural Science Linkage Programme (NSLP)**

| S. No. | Project Title & No. | Name & Address of PI | Sanctioned Cost (Rs.) |
|---|---|---|---|
| 1. | Evaluating milk performance of local and exotic cattle breeds through SNP detection<br>**NSLP/P-UVAS (47)** | Prof. Dr. Masroor Elahi Babar<br>Chairman<br>Department of Live stock Production<br>University of Veterinary and Animal Sciences<br>Lahore. | 3,227,260 |

| | | | |
|---|---|---|---|
| 2. | Development of New synthetic dairy goat breed<br>**NSLP/F-VRI (23)** | Dr. Syed Nasir Husain Shah<br>Director<br>Veterinary Research Institute NWFP, Peshawar | 4,106,316 |
| 3. | Natural compounds from allelopathic Trees as Antifungal Agents against *Ascochyta Rabiei* (PASS.)<br>**NSLP/P-PU (53)** | Dr. Arshad Javaid<br>Lecturer<br>Department of Mycology and Plant Pathology<br>University of the Punjab<br>Lahore. | 2,012,256 |
| 4. | Exploring Potential Groundwater Zones and Artificial Recharge Sites in Potowar Region of Pakistan<br>**NSLP/C-PARC (60)** | Mr. Arshad Ashraf<br>Project Incharge GIS Unit<br>Water Resources Research Institute<br>NARC, Islamabad. | 2,848,044 |
| 5. | Detection of Antibiotic Residues form Milk Meat and Eggs.<br>**NSLP/S-SAU (64)** | Dr. Muhammad Khaskheli<br>Associate Professor<br>Department of Dairy Technology<br>Sindh Agriculture University<br>Tandojam. | 2,095,896 |
| 6. | Cytogenetic Screening of Buffalo Bulls & Replacement Heifers for Genetic Improvement in Punjab.<br>**NSLP/P-UVAS (68)** | Dr. Ahmad Ali<br>Assistant Professor<br>Department of Livestock Production, University of Veterinary and Animal Sciences, Lahore. | 1,726,044 |
| | | | **Total: 16,015, 816/-** |

# DETAILS OF MONITORING AND EVALUATION OF ON-GOING PROJECTS DURING 2008-09

**ANNEXURE-III**

## DETAILS OF MONITORING AND EVALUATION OF ON-GOING PROJECTS DURING 2008-09

### A. Non Development Budget

### a. Semi-annual Reports

| S. No. | Project No. | Project Title | Reports |
|---|---|---|---|
| 1. | F-NIFA/Agr (310) | Effect of mineral and organic nitrogen on yield and nitrogen nutrition of deciduous plum fruit orchards | 2nd |
| 2. | P-AU/Agr (316) | Survey, biology and integrated control measures of citrus slow decline and spreading decline of litchi in Punjab. | 3rd |
| 3. | P-AU/Agr (318) | Response of wheat varieties to osmoprotectants under water deficit conditions | 3rd |
| 4. | P-UAAR/Bio (264) | Selection of probiotic cultures for yogurt making. | 1st |
| 5. | S-SU/Bio (287) | Formulation of low cost quality fish feed from indigenous raw material and its effects on growth and survival of major carps. | 2nd |
| 6. | S-PCSIR/Bio (221) | Preparation of products of economic importance (Chitin & Chitosan) from shellfish waste. | 2nd |
| 7. | P-AU/Bio (356) | Pigeon Newcastle disease virus: surveillance and pathogenicity for chickens and development of vaccine for control. | 2nd |
| 8. | S-KU/Bio (342) | Biology of edible crabs (*Portunus pelagicus* and *P. sanuinolentus*) occurring in the coastal waters of Karachi. | 3rd |
| 9. | P-NIAB/Bio (353) | Studying the role of anti-oxidant enzymes in controlling programmed cell death (PCD) triggered in plants in response of exogenous stresses. | 1st |
| 10. | P-AU/Bio (375) | Prospects of breeding and culturing of *Channa marulius* by using different techniques. | 1st |

| | | | |
|---|---|---|---|
| 11. | C-PMNH/Bio (380) | Taxonomic and ethnobotanical studies of economically important plants of Galiat with special reference to their trade. | 1st |
| 12. | C-QU/Bio (402) | Study of the microbes and their role (ecological linkages) in most temperate coniferous forest ecozone in Murree hills range. | 1st |
| 13. | F-AU/Bio (403) | Effect of sperm concentration, season and extenders on goat's semen integrity and fertility. | 1st |
| 14. | S-KU/Bio (404) | Isolation and characterization of bio-active protein from thermoduric bacteria of sub-optimal habitat. | 1st |
| 15. | P-AU/Bio (405) | A contribution to the rust flora of AJK (Azad Jammu & Kashmir) and adjacent northern area of Pakistan. | 1st |
| 16. | P-UAF/Bio (408) | Preparation and characterization of legumes protein isolates to improve the nutritional and functional properties of baked products. | 1st |
| 17. | S-NIA/Biotech (134) | Use of induced somatic mutation & biotechnology for the genetic improvement of sugar cane (Saccharum sp. Hybrid). | 2nd |
| 18. | C-PMNH/Earth (79) | Biostiatigraphic zonation and the economic significance of the ladshart limestone of opaleocene age in the salt range Pakistan | 1st |
| 19. | C-PMNH/Earth (81) | Sedimentological studies of delta formation in Western Salt Range | 1st |
| 20. | P-AU/Engg(53) | Decision support system for better crop productivity and environmental quality | 1st |
| 21. | P-PCRWR/Engg (81) | Water management practices for major crops under drought | 1st |
| 22. | P-CEWRE/Engg(95) | Critical analysis and impact of controlling parameters in upper Indus basin on water resources of Pakistan. | 1st |
| 23. | F-GIK/Engg(102) | Design, fabrication and installation of photovoltaic system with load controller for the generation of 4-5 Kw power | 1st |

| | | | |
|---|---|---|---|
| 24. | S-KU/Envr(78) | Biodiversity, systematics and ecology of free living marine nematodes of Arabian sea from Pakistan | 1st |
| 25. | S-PCSIR/Env (86) | Hydrochemical studies and development of indigenous defluaridaiton technology for fluoride contaminated groundwater in the Thar Desert Pakistan | 1st |
| 26. | F-PMRC/Med (204) | Treatment of HCV in traditional medicine: a scientific evaluation through blood chemistry, viral load and level of patient satisfaction in pre and post treatment state. | 1st |
| 27. | C-COMSATS/ Med (220) | Epidemiological investigation of Pertussis infection in Pakistan the first ever report of this type from Pakistan | 2nd |
| 28. | C-QU/Phys (134) | Measurements of Photo-Ionization Cross Section of Atoms | 1st |

**b. First Annual Reports**

| | | |
|---|---|---|
| 29. | F-NIFA/Agr (310) | Effect of mineral and organic nitrogen on yield and nitrogen nutrition of deciduous plum fruit orchards |
| 30. | P-AU/Agr (319) | Potential use of $co_2$ as foliar fertilizer for wheat yield enhancement under salt stress: strategies for the future |
| 31. | S-PCSIR/Bio (221) | Preparation of products of economic importance (Chitin & Chitosan) from shellfish waste. |
| 32. | S-AKU/Bio (244) | The effect of ursodeoxycholic acid (UDCA) therapy on in-vitro gallbladder smooth muscle contractility. |
| 33. | S-SU/Bio (287) | Formulation of low cost quality fish feed from indigenous raw material and its effects on growth and survival of major carps. |
| 34. | S-KU/Bio (341) | Experimental farming of commercially important marine shrimps near Mirpur Sakro, Thatta. |
| 35. | P-AU/Bio (350) | Development, standardization and evaluation of probiotics in poultry. |
| 36. | P-NIAB/Bio (353) | Studying the role of anti-oxidant enzymes in controlling programmed cell death (PCD) triggered in plants in response of exogenous stresses. |

| | | |
|---|---|---|
| 37. | P-AU/Bio (355) | Pharmacological evaluation of two anti-hyperlipidaemic indigenous medicinal plants in albino rabbits and determination of their mechanisms of action. |
| 38. | S-KU/Bio(360) | Hatchery culture of commercially important oysters. |
| 39. | P-AU/Bio (375) | Prospects of breeding and culturing of Channa marulius by using different techniques. |
| 40. | S-AKU/Bio (377) | Studies on effects of indigenous medicinal plants on hypercholesterolemia, hypertension and endothelial dysfunction. |
| 41. | P-UAF/Bio (408) | Preparation and characterization of legumes protein isolates to improve the nutritional and functional properties of baked products. |
| 42. | Biotech /P-NIBGE/Ind (47) | Development of Hyper Producer Cephalosporin C Producing Strain of Acremonitun chrysogum by RNA Interference Technique |
| 43. | Biotech/P-NIBGE/Med (58) | Cloning expression & characterization of INGAP encoded gene: A respective means of amelioration of diabetes. |
| 44. | Biotech/P-NIBGE/Med (76) | Studies on genetics & Mutations of low density lipoprotein receptor gene (LDLR); Implication in diagnosis, prognosis, treatment & management of familial hypercholesterolemia in Pakistan |
| 45. | Biotech/ S-KU/Med (80) | Production of monoclonal antibodies for rapid diagnosis of hepatitis-C |
| 46. | S-NIA/Biotech (134) | Use of induced somatic mutation & biotechnology for the genetic improvement of sugar cane (Saccharum sp. Hybrid) |
| 47. | F-IBGE/ Biotech (209) | In vitro development of salt tolerance in rice. |
| 48. | C-QU/Chem (270) | Studies of Vanadium-Organic Ligand Systems Containing Peptide Linkage: Synthesis Structural Elucidation and Biological Applications. |
| 49. | C-QU/Chem (395) | Stereo-Selective Total Synthesis of Some Antimalarial, Antituberculous Antifungal and Cytotoxic Dihydroisocoumarin Metabolites. |
| 50. | P- PCRWR/ Engg(80) | Effect of land leveling on land use intensity, water use and water application efficiencies. |

| | | |
|---|---|---|
| 51. | F-NIFA/Engg (216) | Design and fabrication of a laboratory size screw extruder for conversion of agro-based materials into value added food and feed products. |
| 52. | P-KRL/Engg (284) | Synthesis and characterization of PIEZO-electric BaTiO3 crystals |
| 53. | C-PINSTECH/Env (87) | Measurement of air-borne radioactive pollutants (natural and fallout radionuclides) in major cities of Pakistan |
| 54. | C-PINSTECH/Med (207) | Helicobacter pylori in children: diagnostic method prevalence. strain identification and effect on growth in Pakistan |
| 55. | S-AKU/Med (210) | Deficiency of vitamins b6, b12 and folic acid and its relationship to hyperhomocysteinemia in a pakistani population: is there any role of methylenetetrahy drofolate reductase gene in causing hyperhomocysteinemia in this Population |
| 56. | C-COMSATS/ Med (220) | Epidemiological investigation of Pertussis infection in Pakistan the first ever report of this type from Pakistan |

**c. Second Annual Reports**

| | | |
|---|---|---|
| 57. | P-AU/Agr (318) | Response of wheat varieties to Osmoprotectants under water deficit conditions |
| 58. | F-NIFA/Bio (141) | Mushroom cultivation and popularization as cottage industry in NWFP, Pakistan. |
| 59. | S-KU/Bio (342) | Biology of edible crabs (*Portunus pelagicus* and *P. sanuinolentus*) occurring in the coastal waters of Karachi. |
| 60. | P-AU/Bio (352) | Molecular epidemiology and immunohistochemistry of Enteropathogenic *Escherichaia coli* (EPEC) in bovine and human neonates. |
| 61. | P-AU/Bio (356) | Pigeon Newcastle disease virus: surveillance and pathogenicity for chickens and development of vaccine for control. |
| 62. | Biotech /P-NIBGE/Ind (47) | Development of hyper producer cephalosporin c producing strain of *Acremonitun Chrysogum* by RNA interference technique |
| 63. | Biotech /P-NIBGE/ Med (50) | Detection of Y chromosome micro deletions associated with infertility in different geographic/ ethnic groups in Pakistan. |

| | | |
|---|---|---|
| 64. | F-UET/Engg (87) | Design and development of sugarcane planter for small and medium land holders of Pakistan |
| 65. | S-SU/Earth (251) | Paleoenvironmental study of early Cretaceous Lower Goru formation, Sindh Monocline, Lower Indus Basin. |
| 66. | S-PCRWR/Engg (184) | Crop response under different water management strategies in irrigated areas of Sindh. |
| 67. | C-QU/Phys (129) | An investigator of collective excitation in density modulated nano-structures in magnetic field. |
| 68. | P-PU/Phys (131). | Nonlinear electromagnetic wave propagation in plasma like media |

**d. Final Technical Reports**

| | | |
|---|---|---|
| 69. | F-AU/Agr (115) | Growth pattern and nutritional status of infants and toddlers in North West Frontier Province, Pakistan |
| 70. | S-AKU/Bio (365) | Role of testosterone and cytokines interactions in fertility regulation. |
| 71. | Biotech/P-AU/Med (24/1) | Technologies development for the production of gonadotropin from Animal Sources |
| 72. | Biotech/P-NIAB/Agr (44) | Characterization of Pakistani wheat varieties by microsatellite markers |
| 73. | Biotech/P-NIBGE/Envr (48) | Cloning of raw starch digesting alpha amylase from *Bacillus* sp. and its expression in *E. coli.* |
| 74. | P-UAAR/ Biotech (220) | Cloning and sequencing of major DNA components of banana bunchy top virus from Pakistan |
| 75. | S-PCSIR/Chem (292) | Economic viability of pesticidal residues and PCBs free fishery products. |
| 76. | P-AU/Engg (54) | Controlled drainage for crop production and water quality enhancement |
| 77. | C-PINSTECH/Engg (66) | Groundwater flow and containment transport modeling and assessment of potable groundwater quality of Lahore aquifer. |
| 78. | P-PCSIR/Env (64) | Survey and monitoring of noise pollution in Lahore city |

| | | |
|---|---|---|
| 79. | F-AU/Env (201) | Heavy metal contamination of soil, water, fruit and vegetables through sewage water |
| 80. | US-NSF/C-QU/Phys (18) | Magnetic and structural studies of nano particles. |

## B. Natural Science Linkage Programme (NSLP)

### a. Semi-annual Reports

| S. No. | Project No. | Project Title | Reports |
|---|---|---|---|
| 1. | NSLP/S-PARC (1) | Nematodes associated with almond (*Prunus amygdalus* Batsch) and pomegranate (*Punica granatum* L.) and their management using oil-cakes in Khuzdar and Kalat districts | 1st |
| 2. | NSLP/P-BARI (4) | Production of germplasm and breeding material of wheat for drought and heat tolerance | 1st |
| 3. | NSLP/P-NIAB (14) | Insecticide resistance management of Lepidopteron pests of cotton | 1st |
| 4. | NSLP/F-AU (25) | Quantification of economic gain from chickpea crop sown on irrigated fields in southern NWFP & its implication for agricultural extension | 1st |
| 5. | NSLP/P-UAA (35) | Identification of chemically defined extenders for cryopreservation of buffalo bull spermatozoa | 1st |

### b. First Annual Report

| | | |
|---|---|---|
| 6. | NSLP/S-PARC (1) | Nematodes associated with almond (*Prunus amygdalus* Batsch) and pomegranate (*Punica granatum* L.) and their management using oil-cakes in Khuzdar and Kalat districts |

# SCIENTIFIC PUBLICATIONS PRODUCED THROUGH PSF SUPPORTED COMPLETED PROJECTS DURING 2008-09

**ANNEXURE-IV**

## SCIENTIFIC PUBLICATIONS PRODUCED THROUGH PSF SUPPORTED COMPLETED PROJECTS DURING 2008-09

| Sr. No | Project No. | Publication |
|---|---|---|
| 1. | AJK-UCR/Agr (275) | 1. Abbasi, M.K. and Khan, M.N. 2004. Introduction of white clover for herbage production and nitrogen fixation in the hilly area of Azad Jummu and Kashmir. Mountain Research Development 24: 234-240.<br>2. Tahir, M.M., Abbasi, M.K. and Hafeez, F.Y. 2008. Isolation and characterization of Rhizobium trifolii isolated from white clover native to Azad Jammu and Kashmir. Annals of Microbiology 58:181:188. |
| 2. | P-AU/Agr (283) | 3. M. Tariq Javed, M. Usman, M. Irfan and Monica Cagiola. 2006. A Study on Tuberculosis in Buffaloes: Some Epidemiological Aspects Along with Haematological and Serum Protein Changes. Veterinarski Arhiv, (Republic of Croatia) 76 (3): 193-206.<br>**Abstracts Published:**<br>i. Muhammad Tariq Javed, Francesco Feliziani, Imtiaz Ali, Muhammad Irfan, Masood Akhtar, Ahrar Khan, Massimo Bugatti, Giulio Severi and Monica Cagiola, Indagine Sulla Prevalenza Di M. Bovis in Alcuni Allevamenti Bovini in Pakistan. International workshop of Veterinary epidemiology, medicina umana, medicina veterinaria e tutela dell'ambiente: possibili sinergie in sanita pubblica, perugia, 12-13 giugno 2006, pp: 70.<br>ii. Javed, M. T. Bovine Tuberculosis–Future Strategies for SARC Countries. In International Symposium & 5th Annual Conference on New Strategies for Prevention and control of Emerging and Re-emerging Zoo noses –An Integrated Veterinary and Medical Approach" on 12th to 14th October, 2006, Palampur India.<br>iii. M. Tariq Javed, Alicia Aranaz, M. Akhtar and M. Cagiola. 2006. Future Strategies to Eradicate Bovine Tuberculosis from Pakistan. 3rd National Conference on Agriculture and Animal Sciences, 21-23 November, 2006. pp: 29. |

iv. M. Tariq Javed, Moniuca Cagiola and Alicia Aranaz. 2007. Strategies to control bovine tuberculosis in Asian countries. 2nd international Symposium on Infectious Diseases and Health Sciences Department of Veterinary Pathobiology. Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya, Sri Lanka. July 26-27, 2007. pp: 21.

v. Farooq A. Farooqi M. T. Javed, 2008. Epidemiological and haematological studies on bovine tuberculosis in sheep, goats and buffaloes in some Districts of Punjab. Proceedings of the National Seminar on "Animal Health-Reflections & Future Horizons", March 06, 2008. Faculty of Veterinary Science, University of Agriculture, Faisalabad, Pakistan pp: 171-172

vi. Hafiz A. Latif Shahid and M.T. Javed, 2008. Epidemiological and haematological studies on bovine tuberculosis in buffaloes and zoo animals. Proceedings of the National Seminar on "Animal Health-Reflections &Future Horizons", March 06, 2008. Faculty of Veterinary Science, University of Agriculture, Faisalabad, Pakistan, pp: 172.

vii. M. Waisq and M. T. Javed, 2008. Epidemiological and haematological studies on bovine tuberculosis in cattle in two cities of Punjab. Proceeding of the National Seminar on "Animal Health-Reflections & Future Horizons", March 06, 2008. Faculty of Veterinary Science, University of Agriculture, Faisalabad. pp.173.

viii. Javed M. T., Latif Shahid, M. Irfan, Wasiq Ali, Farooq Ahmed, Alicia Aranaz and Monica Cagiola, 2009. Study on bovine tuberculosis in cattle, buffaloes and zoo animals. Proceeding National Conference on Lung Diseases organized by Department of Pathology, King Edward Medial Univeristy, Lahore on 29-30th April, 2009. pp: 13.

**Papers Presented in International Conferences:**

i. Bovine Tuberculosis - Future Strategies for SARC Countries. International Symposium & 5th Annual conference on New Strategies for Prevention and Control of Emerging and Reemerging Zoo noses-An Integrated Veterinary and Medical Approach" on 12th to 14th October, 2006, Palampur, India.

Strategies to control bovine tuberculosis in Asian countries. 2nd International Symposium on Infectious Diseases and Health Sciences Department of Veterinary Pathobiology. Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, Peradeniya, Sri Lanka. July 26-27, 2007.

3. P-PU/Bio (347)

1. Anwar, M.I, Akhtar, M., Hussain, I., Muhammad, F., Haq, A.U. and Bashir, S. 2008. Field evaluation of Eimeria tanella (local isolates) gametocytes vaccine and its comparative efficacy with imported live vaccine Livacox. Parasitol. Res.104: 135-143.
2. Anwar, M.I, Akhtar, M., Hussain, I., Muhammad, F. and Haq, A.U. 2008. Effects of local gametocyte and livacox vaccines on live body weight gain and lymphoid organs in chickens. Pak. Vet. J. 28: 136-138.

4. Biotech/P-AU/Med (24/1)

**Abstract Published**

i. Akhtar, N., S.U. Rahman, 2005. Technologies development for the production of gonadotropins from animal sources. First National Conference on Health Biotechnology. University of Health Science, Lahore, organized by National Commission on Biotechnology. 27-28 Jan, pp: 48-49.

ii. Abbas, S.F. and N, Akhtar, 2008. Bioestimation of follicular stimulating hormone (FSH) secreted in the culture medium using bovine adenohypophysis. National Seminar in Animal Health – Reflections & Future Horizons, Univ. Agri. Faisalabad Pakistan. March 6. pp: 199.

iii. Akhtar, N., S.U. Rahman, and S. Ali, 2008. Quantification of FSH in crude extract of suspension culture. National Seminar on Animal Health Reflections & Future Horizons, Univ. Agri. Faisalabad Pakistan, March 6, pp: 200

iv. Umer, M. and N. Akhtar, 2008. Studies on biological expression of prepubertal female rabbits in response to pituitary hormones extracted from in vitro cultures of buffalo adenohypophysis. National Seminar on Animal Health – Reflections & Future Horizons, Univ. Agri. Faisalabad Pakistan. March 6: pp: 200-201.

v. Din, G.N.U. and S. Ali, 2008. Studies on vital staining evidence of gonadotropes in adenohypophysis of Nili-Ravi buffaloes cultured in RPMI-1640 medium. National Seminar on Animal Health – Reflections & Future Horizons, Univ. Agri. Faisalabad Pakistan. March 6. pp: 202-203

vi. Akhtar, N., S.U. Rehman, 2008. Technologies development for the production of gonadotropins from animal sources. 2nd National Conference on Health Biotechnology. Pakistan Academy Science Islamabad, organized by National Commission on Biotechnology. 27-28 May, pp: 94

5. Biotech/P-NIAB/Agr (44)

**Papers Presented in Conferences**

i. Nayyer Iqbal, Aqsa Tabassum, Hina Ali and Amjad Hameed 2008. Paper presentation entitled "Quantitative Assessment of Genetic Diversity in Wheat Germplasm using Microsatellite Markers" in International Conference of Plant Scientist held at, University of Agriculture, Faisalabad from April 21-24, 2008

ii. Nayyer Iqbal, Aqsa Tabassum 2008. Oral presentation "Characterization of Pakistani wheat varieties through microsatellite markers" in international Conference on Recent Advances in Agricultural Biotechnology held from 18-19 Dec-2007, Islamabad.

6. Biotech/P-UAAR (220)

**Papers Presented in Conferences**

i. Hyder, M.Z., Raza, S.Q., Hameed, S. Khalid, S. and Naqvi, S.M.S. 2006. Molecular characterization of a Banana bunchy top virus isolate from Pakistan based on DNA-1. In 1st International Egyptian-Jordanian Conference under the theme of "Biotechnology and Sustainable Development: Current Status and Future Scenarios" during December 11-14, 2006, held at National Research Center, Cairo, Egypt.

ii. Hyder, M.Z., Raza, S.Q., Hameed, S. Khalid, S. and Naqvi, S.M.S. 2007. Phylogenetic relationship of TJ1 isolate of Banana bunchy top virus from Pakistan by DNA-R sequence analysis". Canadian J. Plant. Pathol. 29: 63-68.

**Gene sequences submitted in the Gene Bank**

i. Hyder, M.Z., S.Q. Raza, S. Hameed, S. Khalid, S.M. Saqlan Naqvi, 2005. Banana bunchy top virus isolate TJ1 segment DNA-R replicase gene, complete cds. (Aceesssion# AY996562).

ii. Hyder, M.Z., S.Q., Raza, S.M. Saqlan Naqvi, 2007. DNA-S Banana bunchy top virus isolate TJ1 segment DNA-S Coat protein gene, complete cds (Accession#EF593169).

7. C-QU/Chem (203)

1. Aurangzeb Hasan, Lubna Rasheed, and Abdul Malik, 2007. Synthesis and Characterization of Variably Halogdnated Chalcones and Flavonols and Study of their Antifungal Activity, Asian J. Chem. Vol.19, No.2.

8. C-QU/Chem (376)

1. Javid H. Zaidi, M. Arfan, Khalid M. Khan*, Shahnaz Perveen and Nida Ambereen, 2006. Reactions of N-Protected Amino Acids with Alkyl chloromethyl ethers and Chloromethyl Sulfide. Letters in Org. Chem. 3, 242-243.

2. Javid H. Zaidi*, Khlaid M. Khan*, Sadullah Mir, Naseem Iqbal Gunjal and M. Arfan, 2008. In Situ Synthesis of Benzyl Chloromethyl Ether and its Use for the Protection and Deprotection of Bifunctional Hydroxyl Compounds, Letters in Org. Chem. 5.

3. Javid Hussain Zaidi*, Muhammad Arfan, Jabbar Hussain Shah and Khalid Mohammed Khan, 2008. An Improved Method of Synthesis of N-protected L-acids As Their Benzoxymethyl (BOM) Esters. J. Natural Product Research. 2008, 22(1), 22-25.

9. PSF/ILG/029/03

1. Q. K. Ullah, L. Khan, T. Mahmood, M. A. Khan, 2006. Physiological Activities of Certain Medicinal Plant and Their Metals Accumulation. Jour. Chem. Soc. Pak. 28(2), 158-160.

2. Hussain, L. Khan and T. Mahmood, 2006. Effect of Heavy Metals on Lepidium sativum growing in various polluted Areas of Peshawar, Pakistan. Jour. Chem. Soc. Pak. 28(3), 232-235.

3. L. Khan, Kamal UD Din and T. Mahmood, 2006. Drugs of Natural Origin. Technological Development in Pakistan. Asia Pacific Tech: Monitor. India. 23(6), 53-56.

**Papers Presented in Conferences**

i. L. Khan, N. Ahmad, S. Farooq and K. D. Ahmad. Technical Competence and Business Development organized by Qarshi Research International Hattar Haripur dated Aug 2, 2007. Paper entitled "Technological Development Regarding Herbal Drugs".

ii. L. Khan, N. Ahmad, S. Farooq and K. D. Ahmad. International Training Workshop on useful Technology of Traditional Chinese Medicine, organized by Shan Dong University of Traditional Chinese Medicine dated Sept., 27, 2007. Paper entitled "Traditional Medicine of Pakıstan".

iii. L. Khan, N. Ahmad, S. Farooq and K. D. Ahmad. In service Teacher Course in Chemistry at Kohat University of Science & Technology organized by HEC dated Nov. 19-24, 2007. Paper entitled "Exploitation of Materia Medica for Industrial Utilization".

**PATENT:**

L. Khan, K. D. Ahmad, T. Mahmood and A. M. Khan, 2007. Extraction of Steviosides from Stevia rebaudiana.

10. US-NSF/C-QU/Phys(18)


1. C. Baker, S. Ismat Shah, S. K. Hasanain, 2004. The Magnetic Behavior of Iron and Iron oxide nanoparticle/polymer composites. Journal of Magnetism and Magnetic Materials. 280: 412-418.
2. C. Baker, S. K. Hasanain, S. Ismat Shah, 2004. The Magnetic Behavior of Iron-Oxide Passivated Iron Nanoparticles. J. Appl. Phys. 96: 6657-6662.
3. Abdullah Ceylan, C. Baker, S. K. Hasanain, S., 2005. Nonmonotonic concentration dependence of magnetic response in Fe-nanoparticle-polymer composites. Ismat Shah. Phys. Rev. B. 72: 134411.
4. M. Atif, S.K. Hasanain, M. Nadeem, 2006. Magnetization of Sol-gel prepared Zinc Ferrite Nanoparticles: Effects of inversion and particle size. Solid State Communications. 138:416-421.
5. Abdullah Ceylan, C. C. Baker, S. K. Hasanaın, S. Ismat Shah, 2006. Effect of Particle Size on the Magnetic Properties of Core-Shell Structured Nanoparticles. Journal of Applied Physics. 100: 034301-034305.

6. Lubna Rafiq Shah, Bakhtyar Ali, S. K. Hasanain, A. Mumtaz, C. Baker, S. Ismat Shah, 2006. Effective Magnetic Anisotropy and Coercivity in Fe Nanoparticles prepared by Inert Gas Condensation. International Journal of Modern Physics B. 20(1): 37-47.

7. M. Naeem, S. K. Hasanain, M. Kobayashi, Y. Ishida, A. Fujimori, Scott Buzby, and S. Ismat Shah, 2006. Effect of Reducing Atmosphere on the Magnetism of Zn1-xCoxO ($0 \leq x \leq 0.10$) Nanoparticles. Nanotechnology. 17: 2675–2680.

8. K. Maaz, Arif Mumtaz, S. K. Hasanain and Abdullah Ceylan, 2007. Synthesis and magnetic properties of cobalt ferrite (CoFe2O4) nanoparticles prepared by wet chemical route. Journal of Magnetism and Magnetic Materials. 308: 289-295.

11. **C-QU/Phys(127)**

1. B. Rashid, S. Hafeez, Nek M. Shaikh, M. Saleem, R. Ali & M.A. Baig, 2007. Diagnostics of Copper Plasma Produced by the Fundamental, Second and Third Harmonics of a Nd: YAG Laser. International Journal of Modern Physics B. 21(15): 2697-2710.

2. Nek M. Shaikh, B. Rashid, S. Hafeez, Y. Jamil & M.A. Baig, 2006. Measurement of electron density and temperature of laser-induced zinc plasma. Journal of Physics D Appl. Phys. 39:1384-1391.

3. Nek M. Shaikh B. Rashid, S. Hafeez, S. Mahmood, M. Saleem & M. A. Baig, 2006. Diagnostic of cadmium plasma produced by laser ablation. Journal of Applied Physics. 100(8): 73102-1.

4. Nek M. Shaikh, S. Hafeez, B. Rashid, S. Mahmood & M.A. Baig, 2006. Optical emission studies of the mercury plasma generated by the fundamental, second and third harmonics of a Nd: YAG laser. Journal of Physics D Appl. Phys. 39: 4377-4385.

5. Sami-ul-Haq, S. Mahmood, M.A. Kalyar, M.Rafiq, R. Ali and M.A. Baig. 2007. Photoionization cross section and oscillator strength distribution in the near-threshold region of strontium. Eur. Physical J D. 44: 439-447.

6. M. Anwar ul Haq, M. Riaz, R. Ali and M. A. Baig, 2007. Resonantly enhanced three-photon excitation spectra of lithium. Optics Communications. 272: 116-123.

7. Sami-ul-Haq, S. Mahmood, N. Amin, Y. Jamil, R. Ali and M. A Baig, 2006. Measurements of photoionization cross sections from the 5s5p $^1P_1$ and 5s6s $^1S_0$ excited states of strontium. Journal of Physics B: Atomic, Molecular and Optical Physics. 39: 1587-1596.

8. M. Anwar ul Haq, Shaukat Mahmood, M. Riaz, R. Ali and M. A. Baig, 2005. On the First Ionization Potential of Lithium. Journal of Physics B: Atomic, Molecular and Optical Physics. 38: 577-586.

9. M. Hanif, M. Aslam, R. Ali, S. A. Bhatti, M. A. Baig, 2004. D Klar, M-W Ruf, I D Petrov, V L Sukhorukov and Hartmut Hotop. Experimental and Theoretical Investigation of odd 5p5 ½ nl autoionizing resonances in Xenon atoms. Journal of Physics B. 37:1987-2010.

10. M. Riaz, Anwar-ul-Haq, Raheel Ali and M. A. Baig, 2004. Resonance enhanced multiphoton excitation spectrum of atomic thallium: Optics Communications. 233: 323-332.

# SCIENCE CARAVAN EXHIBITIONS ORGANIZED DURING 2008-09

**ANNEXURE-V**

## SCIENCE CARAVAN EXHIBITIONS ORGANIZED DURING 2008-09

**Federal unit:**

| S. No. | Exhibition Site | Dates | No. of Days | No. of Schools | No. of Students |
|---|---|---|---|---|---|
| 1. | Academy of Secondary Education Thoba, Distt. Rawalpindi | 12.08.08 to 29.08.08 | 18 | 7 | 4000 |
| 2. | Govt. Higher Secondary School Ausia, Tehsil Murree | 20.10.08 to 30.10.08 | 11 | 12 | 6000 |
| 3. | Institute of Space Technology, Islamabad | 14.11.08 to 17.11.08 | 4 | General Public | 4000 |
| 4. | Divisional Public School & College, Rawalpindi | 19.01.09 to 29.01.09 | 11 | 1 | 2800 |
| 5. | Army Public School & College, Attock | 03.02.09 to 14.02.09 | 12 | 4 | 3000 |
| 6. | Beaconhouse School System Banni Gala, Islamabad | 24.05.09 | 1 | 1 | 600 |
| 7. | Army Public School & College, Rawalpindi | 13.05.09 to 19.05.09 | 7 | 1 | 1500 |
| | | **Total:** | **64** | **26** | **21900** |

**Punjab Unit:**

| | | | | | |
|---|---|---|---|---|---|
| 1. | City Public School, Gujranwala | 07.10.08 to 17.10.08 | 11 | 14 | 3500 |
| 2. | Planetarium Show at Sandal College, Faisalabad | 24.10.08 to 28.10.08 | 5 | 1 | 640 |
| 3. | Garrison School System, Jhang | 1.12.08 to 27.12.08 | 7 | 20 | 4000 |
| 4. | Garrison School System, Toba Tek Singh | 01.02.09 to 07.02.09 | 7 | 10 | 2500 |
| 5. | Garrison School System, Lahore | 16.02.09 to 21.02.09 | 6 | Mix Gathering | 1100 |
| 6. | GHSS Sahianwala, Distt. Faisalabad | 23.02.09 to 05.03.09 | 11 | 10 | 3000 |
| 7. | The Educators, Tehsil Gojra, Distt. Toba Tek Singh | 19.04.09 to 25.04.09 | 7 | 13 | 3150 |
| 8. | Govt. High School Daska, Distt. Sialkot | 15.05.09 to 23.05.09 | 9 | | 4000 |
| | | **Total:** | **63** | **83** | **21890** |

**Sindh Unit:**

| | | | | | |
|---|---|---|---|---|---|
| 1. | Govt. High School, Thatta | 05.09.08 to 17.09.08 | 13 | 12 | 2600 |
| 2. | Govt. High School, Sajawal, Distt. Thatta | 18.09.08 to 24.09.08 | 7 | 12 | 3000 |
| 3. | Govt. Girls High School, Thatta | 05.09.08 to 17.09.08 | 13 | 12 | 2500 |
| 4. | Govt. Girls High School, Sajawal, Distt. Thatta | 18.09.08 to 24.09.08 | 7 | 14 | 3000 |
| 5. | Govt. Boys/Girls High Schools, Taluka Moro | 10.11.08 to 04.12.08 | 25 | 25 | 4000 |
| 6. | Govt. Boys/Girls High Schools, Taluka Naushehra Feroze | 25.11.08 to 06.12.08 | 12 | 6 | 3000 |
| 7. | Govt. Boys & Girls Schools, Taluka Kandiaro & Bheria Road, Distt. Naushehro Feroze | 02.01.09 to 22.01.09 | 21 | 14 | 3000 |
| 8. | Govt. Boys & Girls Schools, Taluka Dokri and Bakreni Distt. Larkana | 09.02.09 to 24.02.09 | 16 | 9 | 2400 |
| 9. | Govt. High School, Larkana | 06.04.09 to 22.04.09 | 17 | 14 | 5000 |
| 10. | Govt. Girls High School, Larkana (Unit 2) | -do- | 17 | 17 | 6000 |
| 11. | Govt. High School, Taluka Digri & Tando Jan Muhammad Distt. Mir Pur Khas | 16.05.09 to 31.05.09 | 16 | 8 | 3000 |
| | | **Total:** | **164** | **143** | **37500** |

**NWFP Unit:**

| | | | | | |
|---|---|---|---|---|---|
| 1. | Govt. High School Baffa, Distt. Mansehra | 06.08.08 to 19.08.08 | 14 | 13 | 4000 |
| 2. | Govt. High School Mohandri, Distt. Mansehra | 20.08.08 to 30.08.08 | 11 | 12 | 3500 |
| 3. | Govt. High School Ghazi, Distt. Haripur | 29.10.08 to 11.11.08 | 14 | 19 | 4500 |
| 4. | Govt. High School Turlandi, Distt. Swabi | 13.04.09 to 25.04.09 | 13 | 9 | 2700 |
| 5. | Govt. Higher Secondary School Risalpur, Distt. Nowsehra | 15.12.08 to 24.12.08 | 10 | 6 | 1600 |
| | | **Total:** | **62** | **59** | **16300** |

**Balochistan Unit:**

| | | | | | |
|---|---|---|---|---|---|
| 1. | Govt. High School, Ziarat | 25.08.09 to 29.08.09 | 5 | 7 | 3750 |
| 2 | Govt. Girls High School, Ziarat | 30.08.09 to 31.08.09 | 2 | 2 | 1275 |
| | | **Total:** | **7** | **9** | **5025** |

| | **No. of Days** | **No. of Schools** | **No. of Students** |
|---|---|---|---|
| **Grand Total** | **360** | **320** | **102615** |

# LIST OF WINNER STUDENTS OF 18TH INTRA BOARD SCIENCE ESSAY COMPETITION ON "ENERGY CRISIS & ITS POSSIBLE SOLUTION"

**ANNEXURE-VI**

## LIST OF WINNER STUDENTS OF 18TH INTRA BOARD SCIENCE ESSAY COMPETITION
## THEME:-"ENERGY CRISIS & ITS POSSIBLE SOLUTION"

### 1. BISE, Faisalabad

| S.No. | Name of the winner student | Name and Address of School | Position | Amount of Prize mony |
|---|---|---|---|---|
| **English** | | | | |
| 1 | Aneeza Farooq D/o Dr. Farooq Ahmed | Divisional Public School and College (Girls Section) Faisalabad | 1st | Rs.5000/- |
| 2 | Abida Batool D/o Dr. Ashraf Ali | Laboratory Girls High School, Jail Road, Agricultural University, Faisalabad | 2nd | Rs.3000/- |
| 3 | Sidra Saeed D/o Saeed Iqbal Gondal | Govt. Girls High School, Kamalia | 3rd | Rs.2000/- |

### 2. BISE, Mardan

| | | | | |
|---|---|---|---|---|
| **English** | | | | |
| 1 | Faizan Abid S/o Abdur Rehman Abid | Working Folks Grammar School, Aman Garh, Nowshera | 1st | Rs.5000/- |
| 2 | Nayab Iqbal S/o Iqbal Ahmed | Millat Public School Tordher, Swabi | 2nd | Rs.3000/- |
| 3 | Sumbal Rehman D/o Atta-ur-Rehman | ANSI Girls School, Mardan | 3rd | Rs.2000/- |
| **Urdu** | | | | |
| 1 | Khalid Qazi | The Mardan Model School, Mardan | 1st | Rs.5000/- |
| 2 | Fatema Bibi D/o Abdul Munaf | Govt. Girls Higher Secondary School, Shaidu Nowshera | 2nd | Rs.3000/- |
| 3 | Mahrukh Maryan | Presentation Convent High School, Risalpur, Nowshera | 3rd | Rs.2000/- |
| **Sindhi** | | | | |
| 1 | Ghulam Mustafa S/o Sultan Ahmed Soomro | Pakistan Locomotive Factory (PLF) Public School Risalpur, Nowshera | 1st | Rs.5000/- |

**3. BISE, Larkana**

**Urdu**

| | | | | |
|---|---|---|---|---|
| 1 | Samia Naz Solangi D/o Muhammad Ibrahim Solangi | Govt. Girls English Medium Model High School, Larkana | 1st | Rs.5000/- |

**Sindhi**

| | | | | |
|---|---|---|---|---|
| 2 | Sabira D/o Muhammad Hassan | Govt. Girls English Medium Model High School, Larkana | 2nd | Rs.3000 |

**English**

| | | | | |
|---|---|---|---|---|
| 3 | Muhammad Aslam S/o Abdul Jabbar Soomro | Govt. High School No.1, Shikarpur | 3rd | Rs.2000/- |

**4. BISE, Kohat**

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Urooj Bangash | Govt. Girls Centennial Model High School, Kohat | 1st | Rs.5000/- |
| 2 | Mujahid Wasim Durani S/o Rasool Shah Durrani | Hira Model School Takhat-e-Nasrati, Karak | 2nd | Rs.3000/- |
| 3 | Huzaifa Wasiullah S/o Dr. Wasiullah Malik | St. Joseph Convent Public High School, Kohat | 3rd | Rs.2000/- |

**Urdu**

| | | | | |
|---|---|---|---|---|
| 1 | Fazal-ur-Rehman S/o Abdur Rehman | St. Joseph Convent Public High School, Kohat | 1st | Rs.5000/- |
| 2 | Sadaf Nasir S/o Nasir Masih | St. Joseph Convent Public High School, Kohat | 2nd | Rs.3000/- |
| 3 | Zulfiqarnain Ahmed Khattak S/o Capt (R) Mesran Gul | Govt. High School No.2 Kohat | 3rd | Rs.2000/- |

**5. BISE, Abbottabad**

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Noor ul Ain Fayyaz D/o Muhammad Fayyaz Khan | Quaid-e-Azam PS, Haripur | 1st | Rs.5000/- |
| 2 | Fatima Khan D/o Waseem Akram | Al Imtiaz Academy, Supply Abbottabad | 2nd | Rs.3000/- |
| 3 | Mahroona Ali Syed D/o S. Niaz Ali Shah | Khyber PS & College, Mansehra | 3rd | Rs.2000/- |

## 6. BISE, Sargodha

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Maida Ali D/o Liaqat Ali | Divisional Public School, Sargodha | 1st | Rs.5000/- |
| 2 | Farhad Mehmood S/o Khalid Mehmood | Dar-e-Arqam Boys Model School, Satellite Town, Sargodha | 2nd | Rs.3000/- |
| 3 | Maira Ijaz D/o Ijaz Ahmed | Dar-e-Arqam Girls Model High School, Satellite Town, Sargodha | 3rd | Rs.2000/- |

## 7. BISE, Multan

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Fashwa Khan Tareen D/o Muhammad Arshad Khan Tareen | Workers Welfare School for Girls, Near M.D.A. Chowk, Gulraiz Colony, Multan | 1st | Rs.5000/- |
| 2 | Tanzila Hanzal D/o Muhammmad Rafique | Workers Welfare School for Girls Near M.D.A. Chowk, Gulraiz Colony, Multan | 3rd | Rs.2000/- |

**Urdu**

| | | | | |
|---|---|---|---|---|
| 1 | Awais Altaf Shah S/o Altaf Hussain Shah | The Educators, Boys Campus, 25 Fateh sher Road, Sahiwal | 2nd | Rs.3000/- |

## 8. BISE, Quetta

**Urdu**

| | | | | |
|---|---|---|---|---|
| 1 | Safia D/o Mohammad Haider | Govt. Isa Khan Girls High School, Quetta | 1st | Rs.5000/- |
| 2 | Mohammad Yasir S/o Ahmed Hussain | Sardar Ishaq Khan Govt. High School, Quetta | 2nd | Rs.3000/- |

**English**

| | | | | |
|---|---|---|---|---|
| 3 | Ambreen Hamza D/o Hamza Khan | Govt. Girls High School, Postal Colony, Quetta | 3rd | Rs.2000/- |

## 9. FBISE, Islamabad

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Asma Tasneem | F.G. Girls Model School, Model Town, Humak, Islamabad | 1st | Rs.5000/- |
| 2 | Mariya Siddqui D/o Afzal Ahmed | Faizia Inter College, Shaheen Camp, Peshawar | 2nd | Rs.3000/- |
| 3 | Eliza Batool | Faizia Inter College, Minhas Kamra | 3rd | Rs.2000/- |

**10. BSE, Karachi**

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Bakhtawar D/o Masood Ali | Midasia Foundation Academy, Karachi | 1st | Rs.5000/- |
| 2 | Hafza Riaz D/o Riaz Sheikh | Iqra Huffaz Girls Sec.School, 40 Al-Hamra Society, Tipu Sultan Road, Karachi | 2nd | Rs.3000/- |
| 3. | Bilal Ahmed Baloch | Hamdard Public School, Karachi | 3rd | Rs.3000/- |

**Urdu**

| | | | | |
|---|---|---|---|---|
| 1 | Madiha Ali S/o Muhammad Ali | Iqra Huffaz Girls Sec.School, North Nazimabad Campus, Karachi | 1st | Rs.5000/- |
| 2. | Sadaf Ejaz Khan | B.M.B Toddlers Girls Sec. School, Karachi | 2nd | Rs.3000/- |
| 3. | Samra Sarwar D/o Ghulam Sarwar | Pakistan Navy Model Sec. School, Karsaz, Karachi | 3rd | Rs.2000/- |

**Sindhi**

| | | | | |
|---|---|---|---|---|
| 1 | Ashfaque Ahmed Burdi | K.B.V.C.A.A Model School & College, J.I.A.P Karachi | 1st | Rs.5000/- |
| 2. | Ayesha Farooq | Metropolis Education System (Campus III) | 2nd | Rs.3000/- |
| 3. | Hashim Raza | Queen Victoria Model School | 3rd | Rs.2000/- |

**11. BISE, Mirpur, AJK**

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Mahnoor Shabir D/o Muhammad Shabir | The Guidance House School & College F-2, Mirpur | 1st | Rs.5000/- |

**Urdu**

| | | | | |
|---|---|---|---|---|
| 1 | Marriyam Idrees D/o Muhammad Idrees | Govt. Girls Degree College Chakswari, Mirpur (AJK) | 2nd | Rs.3000/- |
| 2. | Tehmina Anees D/o Sardar Muhammad Anees | -do- | 3rd | Rs.2000/- |

**12. BISE, Rawalpindi**

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Saba Najeeb | Divisional Public School & College, Murree Road, Rawalpindi | 1st | Rs.5000/- |
| 2 | Mutti-ur-Rehman | Oxford Public School, Pindi Gheeb, Distt. Attock | 2nd | Rs.3000/- |

**Urdu**

| | | | | |
|---|---|---|---|---|
| 3 | Tayaba Javed | Govt. Girls High School No.1, Fateh Jhang | 3rd | Rs.2000/- |

## 13. BISE, Hyderabad

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Amna D/o Allah Bux Umer | Govt. Girls Model High School, G.O.R Colony, Hyderabad | 1st | Rs.5000/- |
| 2 | Atiya D/o Khalid Hussain | Happy Home Girls High School, Kotri | 2nd | Rs.3000/- |
| 3 | Gulshan Ara D/o Chd. Sarwar | Govt. Girls High School, Nawabshah | 3rd | Rs.2000/- |

**Urdu**

| | | | | |
|---|---|---|---|---|
| 3 | Iqra Khanum D/o Jawaid Khan | Govt. Girls High School, Nawabshah | 1st | Rs.5000/- |
| 2 | Ramsha Zafar | Govt. Apwa Girls High School, Latifabad, Hyderabad | 2nd | Rs.3000/- |
| 3. | Farooq Mustafar S/o Zahid Hussain | Happy Home High School, Kotri | 3rd | Rs.2000/- |

**Sindhi**

| | | | | |
|---|---|---|---|---|
| 1. | Aqeela D/o Ch. Nabi Bhath | Govt. Girls High School, Court Road, Nawabshah | 1st | Rs.5000/- |
| 2. | Murk Aziz D/o Abdul Aziz | Happy Home High School, Kotri | 2nd | Rs.3000/- |
| 3. | Fazilat D/o Ghulam Hyder | Govt. Girls Hamayat-ul-Islam High School, Hyderabad | 3rd | Rs.2000/- |

## 14. BISE, Lahore

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Areeba Tariq | The Punjab School, Township, Lahore | 1st | Rs.5000/- |
| 2 | Mariyam Farooq | -do- | 2nd | Rs.3000/- |
| 3 | Javaria Tehzeeb | -do- | 3rd | Rs.2000/- |

**Urdu**

| | | | | |
|---|---|---|---|---|
| 3 | Memona Ikhlaq | WAPDA Girls High School, Shalimar Town, Lahore | 1st | Rs.5000/- |
| 2 | Dania Butt | The Punjab School, Township, Lahore | 2nd | Rs.3000/- |
| 3. | Rabia Ikram | -do- | 3rd | Rs.1000/- |
| 4. | Maria Hafez | -do- | 3rd | Rs.1000/- |

## 15. BISE, Sukkur

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Tazeen Kausar D/o Amanullah | Mehran Public High School Piryaloi, Khairpur Mir's | 1st | Rs.5000/- |
| 2 | Madiha Memon D/o Abdul Qadoos | Public School Military Road, Sukkur | 2nd | Rs.3000/- |
| 3 | Saadullah Ansari S/o Amanullah | Mehran Public High School Piryaloi, Khairpur Mir's | 3rd | Rs.2000/- |

## 16. BISE, Bannu

**English**

| | | | | |
|---|---|---|---|---|
| 1 | Fida Hussain S/o Muhammad Nazir | Knowledge Public School, Lakhi Marwat | 1st | Rs.5000/- |
| 2 | Zeeshan Ullah S/o Mashel Khan | -do- | 2nd | Rs.3000/- |

**Urdu**

| | | | | |
|---|---|---|---|---|
| 1 | Zubair Nawaz S/o Akbar Nawaz | Govt. High Secondary School Ismail Khel, Bannu | 1st | Rs.5000/- |

# LIST OF WINNER STUDENTS OF 18TH INTRA BOARD SCIENCE POSTER COMPETITION ON "GLOBAL WARMING AND CLIMATE CHANGE"

**ANNEXURE-VII**

## LIST OF WINNER STUDENTS OF 18TH INTRA BOARD SCIENCE POSTER COMPETITION: THEME:-"GLOBAL WARMING AND CLIMATE CHANGE"

### 1. BISE, Faisalabad

| S. No. | Name of the winner student | Name and Address of School | Position | Amount |
|---|---|---|---|---|
| 1 | Mujeeb-ur-Rehman S/o Ghulam Muhammad | Govt. Comprehensive Model High School, Satellite Town, Jhang | 1st | Rs.5000/- |
| 2 | Asma Shahid D/o Muhammad Shahid | Laboratory Girls High School, Agricultural University, Faisalabad | 2nd | Rs.3000/- |
| 3 | Amina Tufail D/o Muhammad Tufail | Govt. Girls High School, Kamalia | 3rd | Rs.2000/- |

### 2. BISE, Kohat

| | | | | |
|---|---|---|---|---|
| 1 | Zahoor Ahmed | Garrison Cadet College, Kohat | 1st | Rs.5000/- |
| 2 | Najmul Hassan Shah | Fauji Foundation Model School, Kohat | 2nd | Rs.3000/- |
| 3 | Jerry Aftab | St. Joseph Convent Public High School, Kohat | 3rd | Rs.2000/- |

### 3. BISE, Mardan

| | | | | |
|---|---|---|---|---|
| 1 | Junaid Ahmed | Govt. High School, Bicket Gunj, Mardan | 1st | Rs.5000/- |
| 2 | Zainab Qureshi | Working Folks Grammar School, Aman Garh, Nowshera | 2nd | Rs.3000/- |
| 3 | Amna | ANSI Girls School, Mardan | 3rd | Rs.2000/- |

### 4. BISE, Larkana

| | | | | |
|---|---|---|---|---|
| 1 | Shahid Hussain S/o Zahid Hussain | Govt. Pilot Higher Secondary School, Larkana | 1st | Rs.5000/- |
| 2 | Muhammad Ali S/o Shaman Shar Balouch | Govt. High School No.1, Shikarpur | 2nd | Rs.3000/- |

| | | | | |
|---|---|---|---|---|
| 3 | Muhammad Aslam S/o Abdul Jabbar Soomro | Govt. High School No.1, Shikarpur | 3rd | Rs.2000/- |

**5. BISE, Abbottabad**

| | | | | |
|---|---|---|---|---|
| 1 | Mehwish Latif, D/o Hashmat Hanif | Al Imtiaz Academy, Supply, Abbottabad | 1st | Rs.5000/- |
| 2 | Muhammad Ali, S/o Alam zeb Ayaz | Al Imtiaz Academy, Supply, Abbottabad | 2nd | Rs.3000/- |
| 3 | Nazia Anum, D/o Abdul Waheed | Govt. Girls Higher School No.2, Haripur | 3rd | Rs.2000/- |

**6. BISE, Sargodha**

| | | | | |
|---|---|---|---|---|
| 1 | Mehroze Iftikhar, D/o Iftikhar Ahmed | Govt. Comprehensive Girls High School, Sargodha | 1st | Rs.5000/- |
| 2 | Saad Ikram, S/o Muhammad Ikram | Dar-e-Arqam Model School, 182/A, Satellite Town, Sargodha | 2nd | Rs.3000/- |
| 3 | Qurat-ul-Ain, D/o Khan Muhammad | Divisional Public School, Sargodha | 3rd | Rs.2000/- |

**7. BISE, Multan**

| | | | | |
|---|---|---|---|---|
| 1 | Shahana Zulfiqar, D/o Zulfiqar Ali | Govt. Girls High School, Chak Bedi, Pakpattan | 1st | Rs.5000/- |
| 2 | Rameela Ayesha, D/o Mufti Muhammad Haseeb-ud-Din Haider | District Public High School, Pakpatan | 2nd | Rs.3000/- |
| 3 | Saba Gul, D/o Muhammmad Saleem | Govt. Girls High School No.2, Shamshabad, Multan | 3rd | Rs.2000/- |

**8. BISE, Bannu**

| | | | | |
|---|---|---|---|---|
| 1 | Hafiz ur Rehman | Tochi Public High School, Miran Shah, (NWA) | 1st | Rs.5000/- |
| 2 | Nagina Bibi | Govt. Higher Secondary School, S.K Bala, Bannu | 2nd | Rs.3000/- |
| 3 | Durdana Ghaffar | Knowledge Public High School, Lakki Marwat | 3rd | Rs.2000/- |

**9. BISE, Quetta**

| | | | | |
|---|---|---|---|---|
| 1 | Zeenat D/o Nouroz Ali | Govt. Isa Khan Girls High School, Quetta | 1st | Rs.5000/- |
| 2 | Ali Goher S/o Dhani Bakhas | Govt. High School, Manjhi Pur, District Jaffarabad | 2nd | Rs.3000/- |
| 3 | Zakia D/o Ghulam Haider | Govt. Isa Khan Girls High School, Quetta | 3rd | Rs.2000/- |

**10. BSE, Karachi**

| | | | | |
|---|---|---|---|---|
| 1 | Warda Yousuf, D/o Mohammad Yousuf | The Vision School (Malir Campus), Karachi | 1st | Rs.5000/- |
| 2 | Amsil Zehra, D/o Syed Ali Mohammad | Hamdard Public School, Shahra-e-Madinatul Hikmat, Karachi | 2nd | Rs.3000/- |
| 3 | Huda Abdul Sami, S/o Abdul Sami | P.E.C.H.S Girls School-10, Anwer Adil Road, P.E.C.H.S., Karachi | 3rd | Rs.2000/- |

**11. BISE, Gujranwala**

| | | | | |
|---|---|---|---|---|
| 1 | Ahmed Usman | Allama Iqbal Public School for Boys, Sialkot Cantt | 1st | Rs.5000/- |
| 2 | Khurram Rasheed | Allama Iqbal Public School for Boys, Sialkot Cantt | 2nd | Rs.3000/- |
| 3 | Asma Sabir | Govt. Girls Higher Secondary School, Sialkot Cantt | 3rd | Rs.2000/- |

**12. BISE, Mirpur, AJK**

| | | | | |
|---|---|---|---|---|
| 1 | Sonia Nazir , D/o Muhammad Nazir | Govt. Girls Higher Secondary School, Chitter Pari, Mirpur A.K | 1st | Rs.5000/- |
| 2 | Irum Choudhry, D/o Sher Muhammad | Govt. Girls High School No.2, Kotli | 2nd | Rs.3000/- |
| 3 | Farzana Saeed, D/o Muhammad Saeed | Govt. Girls High School No.2, Kotli | 3rd | Rs.2000/- |

**13. BISE, Rawalpindi**

| | | | | |
|---|---|---|---|---|
| 1 | Khadeeja Farooq | Beaconhouse School System for Gilrs, Satellite Town, Rawalpindi | 1st | Rs.5000/- |
| 2 | Uzair Muneer | Beaconhouse School System for Boys, Satellite Town, Rawalpindi | 2nd | Rs.3000/- |
| 3 | Marriyum Inam ul Haq | Bahria Secondary School for Boys, Chakwal | 3rd | Rs.2000/- |

**14. BISE, Lahore**

| | | | | |
|---|---|---|---|---|
| 1 | Ruth Nasir | Cathedral School No.4, 1-P Block, Model Town, Lahore | 1st | Rs.5000/- |
| 2 | Saira Ashraf | District Public School, Renala Khurd, Okara | 2nd | Rs.3000/- |
| 3 | Monisa Bashir Ahmed | National Model School, Sheikhupura | 3rd | Rs.2000/- |

**15. BISE, Hyderabad**

| | | | | |
|---|---|---|---|---|
| 1 | Sobia Iqbal | Cosmopolitian High School, C-22, Block B, Unit 5, Latifiabad No.5, Hyderabad | 1st | Rs.5000/- |
| 2 | Ayesha Asad | Govt. Girls Model High School, G.O.R Colony, Hyderabad | 2nd | Rs.3000/- |
| 3 | Sharukh Khawaja | St. Bonaventure High School, Qasimabad, Hyderabad | 3rd | Rs.2000/- |

**16. FBISE, Islamabad**

| | | | | |
|---|---|---|---|---|
| 1 | Shahroo Malik | OPF Girls College, F-8/2, Islamabad | 1st | Rs.5000/- |
| 2 | Muhammad Asad Ali | Bahria College, Karsaz, Karachi | 2nd | Rs.3000/- |
| 3 | Adil Muhammad Dar | Bahria College, E-8, Islamabad | 3rd | Rs.2000/- |

**17. BISE, Sukkur**

| | | | | |
|---|---|---|---|---|
| 1 | Rabia Zafar | Apwa Excellent World School, Sukkur | 1st | Rs.5000/- |
| 2 | Nida Malik | Gvot. (N) D.M.B Girls High School, Sukkur | 2nd | Rs.3000/- |
| 3 | Maqsood Bhutto | Mari Gas Higher Secondary School, Daharki | 3rd | Rs.2000/- |

# 18TH INTER BOARD SCIENCE POSTER COMPETITION: LIST OF CONSOLATION PRIZE WINNERS ON "GLOBAL WARMING AND CLIMATE CHANGE"

**ANNEXURE-VIII**

## 18TH INTER BOARD SCIENCE POSTER COMPETITION
## LIST OF CONSOLATION PRIZE WINNERS
## THEME:-"GLOBAL WARMING AND CLIMATE CHANGE"

| S. # | Name of the winner student | School | Amount |
|---|---|---|---|
| 1. | Asma Shahid D/o Muhammad Shahid | Laboratory Girls High School, Agricultural University, Faisalabad | Rs.2500/- |
| 2. | Khadeeja Farooq | Beaconhouse School System for Girls Satellite Town, Rawalpindi | Rs.2500/- |
| 3. | Monisa Bashir Ahmed | National Model School, Sheikhupura | Rs.2500/- |
| 4. | Muhammad Aslam S/o Abdul Jabbar Soomro | Govt. High School No.1, Shikarpur | Rs.2500/- |
| 5. | Mujeeb-ur-Rehman S/o Ghulam Muhammad | Govt. Comprehensive Model High School, Satellite Town, Jhang | Rs.2500/- |
| 6. | Nazia Anum D/o Abdul Waheed | Govt. Girls Higher School No.2, Haripur | Rs.2500/- |
| 7. | Qurat-ul-Ain D/o Khan Muhammad | Divisional Public School, Sargodha | Rs.2500/- |
| 8. | Ruth Nasir | Cathedral School No.4, 1-P, Block, Model Town, Lahore | Rs.2500/- |
| 9. | Sobia Iqbal | Cosmopolitan High School, C-22, Block B, Unit No.5, Latifiabad No.5, Hyderabad | Rs.2500/- |
| 10. | Warda Yousuf D/o Mohammad Yousuf | The Vision School (Malir Campus), Karachi | Rs.2500/- |

# WINNER STUDENTS OF PSF SCIENCE MODEL COMPETITION, 2009

**ANNEXURE-IX**

## WINNER STUDENTS OF PSF SCIENCE MODEL COMPETITION 2009

### 1. BISE, Abbottabad

| S. # | Name of student | School | Position | Amount |
|---|---|---|---|---|
| 1. | Haseeb ur Rehman, S/o Bashir Ahmed | Pakistan Scouts Cadet College, Batrasi, Mansehra | 1st | Rs.5000/- |
| 2. | Kalsoom Wazir, D/o Wazir Muhammad | Govt. Girls High School No.2, Mansehra | 2nd | Rs.3000/- |
| 3. | Maryam Rehman, D/o Shams ur Rehman | Al Imtiaz Academy, Abbottabad | 3rd | Rs.2000/- |

**Teachers/Mentors**

| | | | |
|---|---|---|---|
| 1. | Aurangzeb Abbasi | Pakistan Scouts Cadet College, Batrasi, Mansehra | Rs.5000/- |
| 2. | Ghazala Shaheen | Govt. Girls High School No.2, Mansehra | Rs.5000/- |
| 3. | Prof. Hasan Badruddin Khan | Al Imtiaz Academy, Abbottabad | Rs.5000/- |

### 2. BISE, Mirpur, AJK

| | | | | |
|---|---|---|---|---|
| 1. | Mahnoor Shabir, D/o Muhammad Shabir | The Guidence House School and College, Main F-2 Road, Mirpur AJK | 1st | Rs.5000/- |
| 2. | Rubab Bukhari, D/o Syed Nisar Hussain Shah | The Guidence House School and College, Main F-2 Road, Mirpur AJK | 2nd | Rs.3000/- |
| 3. | Iqra Siddique, D/o Muhammad Sadique | Govt. Girls High School F/1, Mirpur, AJK | 3rd | Rs.2000/- |

**Teachers/Mentors**

| | | | |
|---|---|---|---|
| 1. | Aysha Jalil | The Guidence House School and College, Main F-2 Road, Mirpur AJK | Rs.5000/- |
| 2. | Syed Safdar Ali Shah | The Guidence House School and College, Main F-2 Road, Mirpur AJK | Rs.5000/- |
| 3. | Nosheen Bashir | Govt. Girls High School F/1, Mirpur, AJK | Rs.5000/- |

### 3. BISE, D.G. Khan

| | | | | |
|---|---|---|---|---|
| 1. | i) Shazia Karim | Govt. Girls High School No.1, Jampur (Rajanpur) | 1st | Rs.2500/- |
| | ii) Kiran Zulfiqar | | | Rs.2500/- |

| | | | | |
|---|---|---|---|---|
| 2. | i) Muhammad Sohaib Ali | Aims System of Education, D.G. Khan | 2nd | Rs.1500/- |
| | ii) Shaheer Muhammad | | | Rs.1500/- |
| 3. | i) Ahlam Yousaf | Govt. Girls High School No.1, | 3rd | Rs.1000/- |
| | ii) Naima Qadeer | Dera Ghazi Khan | | Rs.1000/- |

**Teachers/Mentors**

| | | | |
|---|---|---|---|
| 1. | Ms. Najam-un-Nisa | Govt. Girls High School No.1, Jampur (Rajanpur) | Rs.5000/- |
| 2. | Mr. Muhammad Iqbal | Aims System of Education, D.G. Khan | Rs.5000/- |
| 3. | Ms. Nasreen Akhtar | Govt. Girls High School No.1, Dera Ghazi Khan | Rs.5000/- |

**4. <u>BISE, Sukkur</u>**

| | | | | |
|---|---|---|---|---|
| 1. | i) Namwar Ayaz | Public School, Sukkur | 1st | Rs.2500/- |
| | ii) Sajjad Ali | -do- | | Rs.2500/- |
| 2. | i) Subhash Mandhan | Mehran Model School, Pano Akil | 2nd | Rs.1500/- |
| | ii) Avinash | -do- | | Rs.1500/- |
| 3. | i) Ali Raza Rajput | Mari Gas Higher Secondary School, Ghotki | 3rd | Rs.1000/- |
| | ii) Danish Ali Shah | -do- | | Rs.1000/- |

**Teachers/Mentors**

| | | | |
|---|---|---|---|
| 1. | Mrs. Shahida Ameer | Public School, Sukkur | Rs.5000/- |
| 2. | Mr. Mumtaz Ali Katto | Mehran Model School, Pano Akil | Rs.5000/- |
| 3. | Mr. Muhammad Ahmed Khan | Mari Gas Higher Secondary School, Ghotki | Rs.5000/- |

# FINANCIAL ASSISTANCE TO SCHOOLS AND R&D ORGANIZATIONS

**ANNEXURE-X**

## FINANCIAL ASSISTANCE TO SCHOOLS AND R&D ORGANIZATIONS

| S. # | Name of Institution | Purpose/Activity | Amount (Rs.) |
|---|---|---|---|
| 1. | National Museum of Science & Technology, Lahore | 21st Annual Science Competition 2008 | 50,000/- |
| 2. | Institute of Space Technology, SUPARCO, Islamabad | Space Week activities | 25,000/- |
| 3. | Govt. Higher Secondary School Ausia, Teh. Murree, Rawalpindi | Purchase of Lab. Equipment | 20,000/- |
| 4. | Fast National University of Computer & Emerging Sciences, Lahore | 5th International & 14th All Pakistan SOFT ware Exhibition & Competition, SOFTEC 2009 | 200,000/- |
| 5. | F.G. Fazia Secondary School (2nd shift) PAF, E-9, Islamabad | Purchase of Lab. Equipment and chemicals | 30,000/- |
| 6. | F.G Sir Syed Boys Secondary School, Rawalpindi | Purchase of Lab. Equipment and Chemicals. | 25,000/- |
| 7. | Army Public School & College, Attock | Purchase of Lab. Equipment | 25,000/- |
| 8. | USWA College Islamabad | Purchase of Lab. Equipment | 50,000/- |
| 9. | PMNH, Islamabad | Art Competition | 32,000/- |
| 10 | COMSATS Institute of Information Technology, Islamabad | To arrange the event "Vision spark 09" | 50,000/- |
| 11 | National Grammar Public School, Khuzdar, Balochistan | Purchase of Science equipment | 25,000/- |
| 12 | Islamabad Model College for Girls I-8/4, Islamabad | Purchase of Lab. Equipment | 10,000/- |
| 13. | F.G. Higher Secondary School, Bhara Kaho, Islamabad | Purchase of Lab. Equipment, Chemicals & Models | 25,000/- |
| 14. | Khadija-tul-Kubra Scientific School for Girls, Khayaban-e-Sir Syed, Rawalpindi | Purchase of Lab. Equipment | 20,000/- |
| 15. | Khwarizmi Science Society C/o Centre of Excellence in Solid State Physics, University of Punjab, Lahore | Purchase of telescope | 50,000/- |
| | | **Total:** | 637,000/- |