

CURRICULUM VITAE

(33 pages)

PERSONAL

Name: KHAN RASS MASOOD (DR.)
Father's Name: Ahmed Ali Khan
Date of Birth: February 23, 1954
Marital Status: Married with three children
Religion: Islam
Nationality: Pakistani
Health: Excellent (Non-Smoker)

Languages:

English: Good
Urdu: Very Good
Punjabi: Good

ACADEMIC

(A) **Present Position:** Professor and Chairman
(October 2005 to date) Department of Botany,
University of the Punjab,
Lahore (Pakistan)

(B) Educational Qualifications

<i>Degree</i>	<i>Year</i>	<i>Subjects</i>	<i>Institution</i>
B.Sc.	1974	Bot., Zool., Chem., Eng.	University of the Punjab, Lahore
M.Sc.	1977	Botany	University of the Punjab, Lahore
Ph.D.	1984	Botany	University of the Punjab, Lahore

(An outline of Ph.D. work is given in Appendix- I)

(C) Research Interests

1. **Sedimentary and Stratigraphic Palynology**
 - 1.1 Biostratigraphy
 - 1.2 Geochronology and correlation of surface and subsurface stratae.

- 1.3 Paleobiogeography, Paleoecology and Paleovegetational Analysis.
- 1.4 Reconstruction of Environment of Deposition of Sediments.
- 1.5 Evaluation of Organic Thermal maturity of Sediments based on Palynological Data.
- 1.6 Study of different categories of Palynodebris as a sedimentological parameter.
- 1.7 Marginal palynology, evaluation of post-depositional hazards, stratigraphic leak and reworking.
- 1.8 Paleobiofacies and microfacies analysis to evaluate environment of deposition and other episodes as additional parameters.

2. Systematic Palynology

- 2.1 Study of morphographic features of palynomorphs and evaluation of taxonomic ranking.

3. Geochemistry

Whole rock analysis including basic macro elemental oxides and their correlation with palynomorph productivity.

4. Paleoethnobotany

Recently established area of study including pollen and phytolith analysis from Archaeological sites to unfold agricultural evolution along with various aspects of urbanization, especially in the Indus Valley civilization.

(D) Post-Doctoral Fellowship (1992-93)

Worked in Bryd Polar Research Centre, Department of Plant Biology, Ohio State University, Columbus, Ohio, USA.

(An outline of work carried out during this tenure is given in Appendix-II)

(E) Professional Courses/Training Undertaken

Appendix-III

(F) Research Projects (as Principal Investigator)

1. Completed

- 1.1 Palynology of Permian Strata (Tobra and Dandot Formations) Salt Range, Pakistan (1995-96), funded by the University of the Punjab.
- 1.2 Palynology of Permian Strata (Warchha and Sardhai Formations), Salt Range, Pakistan (1997-98), funded by the University of the Punjab.

- 1.3 Palynology of Soil Samples From Shalamar Garden, Lahore, Pakistan (2001-2002), funded by UNESCO.
 - 1.4 Palynology of Permian Strata (Amb, Wargal and Chhidru Formations), Salt Range, Pakistan, funded by the University of the Punjab.
 - 1.5 Seeds of Urbanization: Research project funded by National Science Foundation, USA (Senior Research Associate).
- (An outline of work carried out in these projects is given in **Appendix-IV**).

(G) Details of Published Research Work

1.	Published Papers	68
2.	Papers in Press	03
3.	Papers Submitted to Different Journals	05
4.	Manuscripts Ready for Submission to Relevant Journals	04

(For titles, year of publication, see Appendix-V)

(H) Symposia, Conferences Attended/Lectures Delivered/Paper Presented/Course(s) Conducted

Participated and read papers in numerous international and national Symposia and Conferences.
(Details are given in Appendix-VI)

(I) Professional Awards

1. Selected for the award of **Gold Medal** by the Punjab Geological Society for contributing significantly in Paleozoic and Mesozoic Palynology (December, 1998).
2. Selected for **Fellowship award** by the Punjab Geological Society (December, 1998).
3. **Best Teacher Award**, University of the Punjab (2002 & 2004).

(J) Postgraduate Research Programmes

1. **Guidance of Ph.D. Work**

A	Awarded	(ten)
B	Submitted – Evaluation under progress	(one)

(For details please see Appendix-VII)
2. **Guidance of M.Phil/MS Work.**

Completed	(eleven)
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(For details please see Appendix-VIII).

3. Guidance of M.Sc. Work

3.1 1986-2011 – 57 M.Sc. students have worked under my guidance.

(For details please see Appendix- IX).

(K) Teaching Experience

Since joining the University, I have been taught the following courses to the postgraduate classes:

1. Ph.D and M.Phil

1.1 General Courses

- a. Biology and Evolution of Pteridophytes.
- b. Biology and Evolution of Gymnosperms and Angiosperms.

1.2 Special Courses

- a. Advanced Palaeopalynology.
- b. Biostratigraphy.

2. M.Sc.

2.1 General Courses

- a. Evolutionary Biology of Vascular Cryptogams.
- b. Evolutionary Biology of Spermatophytes.
- c. Comparative Morphology of Vascular Plants and Economic Botany.
- d. Anatomy and Taxonomy of Angiosperms.
- e. Phycology and Bryology.
- f. Soil Plant Relationship.

2.2 Special Courses

- a. Applied Palaeopalynology.

(L) Other Academic Activities

1. Editor

Pakistan Journal of Geology, published twice a year by the Punjab Geological Society.

2. Membership of Societies

- a. Member, Pakistan Botanical Society.
- b. Member, Punjab Geological Society.
- c. Member, Pakistan Society of Earth Sciences.
- d. Member, Hiking and Mountaineering Club of the Punjab University.

(M) Educational Administration**1 Convener / Member Board of Studies**

- 1.1 Convener, Board of Studies in Botany, University of the Punjab, Lahore.
- 1.2 Member, Board of Studies, Govt. College University, Lahore.
- 1.3 Member, Board of Studies, Govt. University, Faisalabad.
- 1.4 Member, Board of Studies, Sargodha University, Sargodha.

2 Member Board of Advance Studies

- 2.1 Member Board of Advance Studies, Forman Christian College (A Chartered University), Lahore.

3. Chairman Committees

- 3.1 Chairman, Departmental Doctoral Programme Coordination Committee (DPC), Department of Botany, P.U. Lahore.
- 3.2 Chairman, Annual Report Committee, University of the Punjab, Lahore.
- 3.3 Chairman, Academic Performance & Evaluation Committee, University of the Punjab, Lahore.
- 3.4 Chairman, Entertainment Committee, Book Fair 2008 & 2009, University of the Punjab, Lahore.
- 3.5 Chairman, Entertainment Committee, Convocation Coordination Committee 2009 & 2010, University of the Punjab, Lahore.

4. Member Committees

- 4.1 Member, Convocation Coordination Committee 2009 & 2010, University of the Punjab, Lahore.
- 4.2 Member, Service Structure Committee, University of the Punjab, Lahore.
- 4.3 Member, Purchase/Management Committee for Undergraduate Block, University of the Punjab, Lahore.
- 4.4 Member, Calendar Committee, University of the Punjab, Lahore.
- 4.5 Member, Perks & Privilege Committee, University of the Punjab, Lahore.
- 4.6 Member, Committee to review the existing rules & regulations regarding relaxation of qualification/experience for in service employees of the University of the Punjab, Lahore.
- 4.7 Member, Affiliation Committee, University of the Punjab, Lahore.

5. Visiting Professor

- 5.1 Institute of Geology, University of the Punjab, Lahore.

- 5.2 College of Earth & Environmental Sciences, University of the Punjab, Lahore.
- 5.3 Institute of Biochemistry & Biotechnology, University of the Punjab, Lahore.

(N) Field Excursions

a. Higher and Lesser Himalayas

During the past fifteen years since my joining the University I have been conducting field study tours as a team leader/member to the Higher and Lesser Himalayas, Northern Pakistan to collect botanical material and rock samples. This also included imparting training to the students and other professionals to measure sections of sedimentary rocks and use of latest scientific instruments e.g., Clinometer, Compass Prismatic, Map reading, Lithological description of sedimentary outcrops, Procurement and Cataloguing of rock samples.

b. Archaeological Sites

Since 1997 in collaboration with the members (Dr. S. Weber) of the Department of Anthropology, Washington State University, Vancouver, USA I am regularly visiting "Harappa", an important archeological site of the Indus Valley civilization to collect paleoethnobotanical samples. Initial processing of samples has produced encouraging results, which shall be regularly published.

(O) Other Academic and Scholastic Distinctions

Since my school days I have been conferred upon numerous academic and scholastic awards.

(For details please see Appendix-IX).

Appendices (Biodata)

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Appendix – I

Ph.D. – 1979-83

The field of investigation was “Sedimentary and Stratigraphical Palynology. More than six hundred rock samples from the Paleozoic (Early Permian - Amb, Warchha and Dandot Formations) and Mesozoic (Early Jurassic - Datta Formation) sediments of the Salt Range, Pakistan were studied palynologically. These rock samples were collected during more than twenty field study tours at six different localities from the Eastern, Western and Central Salt Range, during which time each Formation was carefully measured. Relevant held data including lithological description of Formations and their finer subdivisions (e.g., members, units, beds etc.), mutual contacts, faults and other details were recorded. Two hundred and twenty-five species of palynomorph belonging to eighty-five genera wet-c recorded and systematically described Palynological data was interpreted in terms of:

1. **Palynostratigraphy:** Detailed Biostratigraphy of the sediments was carried out based on fine resolution Palynology and stratigraphic analysis of microfossils. In each geological formation several Assemblage Zones and subzones (Cenozones) were recognized.
2. **Correlation:** These zones were used for lateral correlation at local, regional and global levels. Several index palynomorphs (markers) were established for each formation.
3. **Geochronology:** Exact age of each of the investigated formation was determined based on the occurrence of cosmopolitan marker palynomorphs.
4. **Reconstruction of Past Plant Communities:** Vegetational complexion of the past plant communities (including ecosystems) were reconstructed based on the trend(s) of relative dominance of various palynomorph assemblages at different stratigraphic levels.
5. **Gondwana Sequence:** Palynological results supported the existence of the Gondwana land. Paleozoic and Mesozoic sediments of the Salts Range Were correlated with the remaining Gondwana sequence of the world.

Published papers No. 1.1, 1.2, 1.3, 1.4, 1.8, 1.9.

Appendix - II

POSTDOCTORAL FELLOWSHIP

1992-93 - University Grants Commission Award

A postdoctoral fellowship by the said organization provided an opportunity to work in the Bryd Polar Research Centre, Department of Plant Biology, Ohio State University, Columbus, Ohio, USA.

One of the projects that was involved with and directed concerns the discovery, extraction and description of numerous palynomorphs from a stratigraphically important section of rocks in Antarctica. The Mackellar Formation lacked any evidence of microfossils, and thus could not be accurately positioned geologically and correlated with other sediments from other Gondwana continents. I was the first person to extract palynomorphs from these sediments using some different techniques. This contribution made it possible to accurately date these rocks. This was major contribution to better understanding the stratigraphy of Antarctica that will be used by scholars in numerous fields.

I also employed some different techniques and knowledge of Permian palynomorphs in examining sediments from another formation in Antarctica i.e., Buckley Formation. Studies concerning Buckley Formation will also contribute to a better biostratigraphic analysis of these sediments, as I was able to extract a rich palynoflora here as well.

Published paper No. 1.22.

Appendix - III

PROFESSIONAL TRAINING IN CARBONATE PETROLOGY (August - September, 1997)

Following aspects of carbonate petrology were studied in detail:

1. Limestone Formation

- 1.1 Equilibria in the system $\text{CaO-H}_2\text{O-CO}_2$
- 1.2 Calcium carbonate modifications and their stabilities.
- 1.3 Areas of recent carbonate sedimentation.
 - 1.3.1 Bahama Banks.
 - 1.3.2 Persian Gulf
 - 1.3.3 Great Barrier Reef.
- 1.4 Types of fossil limestones.
 - 1.4.1 Bedded limestone-marl sequences.
 - 1.4.2 Reefs.
 - 1.4.3 Oolites.
 - 1.4.4 Platy and lithographic limestones.
 - 1.4.5 Nodular limestones.
 - 1.4.6 Chalks.

2. Limestone analysis

- 2.1 Microfacies: concepts of FOLK and DUNHAM.
- 2.2 Geochemical analysis.
 - 2.2.1 Clastic elements (Si, Al, K, Fe, Ti).
 - 2.2.2 Semiclastic elements (Rb, Mn, Ba, Zn).
 - 2.2.3 Diagenetic elements (Sr, Mg).
 - 2.2.4 Life elements (S, P).
- 2.3 Mineralogical analysis of the insoluble residues.
 - 2.3.1 Grain size distribution (silt/clay ratio).
 - 2.3.2 Clay mineral associations.
 - 2.3.3 Diagenetic neoformations: pyrite, silica.

3. Dolomites

- 3.1 Types and occurrences.
- 3.2 Theories of formation.
- 3.3 Synthetical approach.

3.4 Dedolomitization – recalcification.

4. Stable Isotope Geochemistry

4.1 Limestones.

4.2 Dolomites.

5. Formation of carbonate rocks during Earth's history.

6. Industrial use of Carbonate rocks.

Appendix – IV

RESEARCH PROJECTS

Background

In spite of the long history of research, the detailed litho- and biostratigraphies of the continental and Marine Permian and Lower Triassic Strata in the Salt Range and the Trans-Indus ranges of Pakistan have not been thoroughly clarified, although these areas are important reference areas especially of the Upper Permian and Lower Triassic of the world. We, therefore, strongly felt the need to undertake series of research projects focusing mainly on the palynology of the Permian and Triassic system of the Salt Range, Pakistan. It was further decided to undertake these projects stepwise, firstly on Permian continental outcrops (Nilawahan Group) and then on Permian Marine Sediments (Zaluch Group) followed by the Triassic system.

1. Completed

1.1 Award of a research project from the University of the Punjab (1996-97)

A research project entitled “Palynology of the Permian Strata (Tobra and Dandot Formations), Salt Range, Pakistan” was submitted to the University of the Punjab. The scheme was approved for a period of one year. Under this Contract work on palynological analysis of the rock samples of Tobra and Dandot Formations was undertaken. These Formations are of continental origin and represent Lower Permian (Asselian) Gondwana sequence of the Salt Range, Pakistan. Tobra Formation was deposited in a Fluvio-glacial environment whereas Dandot Formation had a dominantly Lacustrine or partly localized fluvial environment of deposition. Rich palynoflora was obtained from these Formations. Palynological data was interpreted in terms of Geochronology, Correlation and Stratigraphy. Detailed technical report was submitted to the University.

Published paper No. 1.43, 1.48.

1.2 Award of another research project from the University of the Punjab (1997-98)

A project entitled “Palynology of the Permian Strata (Warchha and Sardhai Formations) Salt Range, Pakistan” on the pattern of previous project was submitted to the University of the Punjab. The project was subsequently approved and fully geared during 1997-98. Purpose and scope of this work was detailed palynological analysis of the rock samples of the Warchha and Sardhai Formations. Warchha and Sardhai Formations overlies the Tobra and Dandot Formations and share many common features viz., Early Permian age, Gondwana and continental origin. Another feature of interest is that these four Formations collectively constitute the “Nilawahan Group” of the Permian system of Pakistan (Upper Indus Basin) comprising predominantly of continental rocks. Warchha Formation was deposited in a strong to medium hydrodynamic (fluvial) conditions, whereas Sardhai Formation represents calm and quite lacustrine conditions. These facts were confirmed by palynological findings. Successional changes in plant communities, climate and environment of deposition were studied based on palynological data. Detailed technical report was submitted to the University of the Punjab. Completion of this project also completed palynological studies on the “Nilawahan Group” of the Permian of Pakistan. Sonic part of this project has already been accepted for publication.

Published Papers No. 1.52, 1.53 [in press]

1.3 Award of research project from the UNESCO (2001-2002)

Research Project entitled “Palynology of Soil Samples From Shalamar Garden, Lahore, Pakistan” was awarded by UNESCO through the courtesy of the department of Archaeology, Government of Pakistan. The present study deals with the palynological analysis of twenty-five soil samples obtained from Shalamar Garden, Lahore, Pakistan. The samples were collected from a trench along the southwestern lawn at the middle point of the southern walkway. The prime objective of the investigation was to elucidate periodic changes in the vegetational pattern since pre Shalimar to the present period. Pollen belonging to six Angiospermic

families (Poaceae, Chenopodiaceae, Asteraceae, Anacardiaceae, Fabaceae and Euphorbiaceae) were isolated and identified. Based on pollen analytical results it was concluded that the original vegetation prior to the construction of Shalimar Garden mainly consisted of kikar (*Acacia* sp.) and Grasses (Poaceae), which was subsequently, replaced by other plants belonging to the families viz. Rosaceae (Rose and Plum family) Anacardiaceae (Mango family), Chenopodiaceae (Batho family), Fabaceae (Pulses family) and Asteraceae (Orange, Lemon family).

Published Paper No. 1.57

1.4 Award of research project entitled “Palynology of Permian Strata (Amb, Wargal and Chhidru Formations), Salt Range, Pakistan”, by the University of the Punjab (2000—2001) completed.

Successful completion of the previous two projects opened new vistas and generated wealth of data useful not only for plant or Geoscientists but especially to stratigraphers and other professionals engaged in exploratory work of earth's resources. In order to obtain a comprehensive picture of Permian system of the Salt Range, Pakistan (also called field Geological Museum of the World) it was decided to further expand palynological research to include Permian rocks overlying Nilawahan Group i.e., Amb, Wargal and Chhidru Formations, respectively constituting “Zaluch Group” of the Permian of Pakistan (Upper Indus Basin) containing rocks which were deposited in predominantly marine environment. The above-cited project was submitted to the University of the Punjab, which after being thoroughly evaluated was duly approved. The investigation is in full swing and we intend to undertake series of field study tours starting in September 2000 to explore these formations in detail, to collect rock samples and relevant field information.

1.5 Award of the project entitled “Seeds of Urbanism: Paleoethnobotany at Harappa”, by the National Science Foundation, USA as Senior Research Associate along with Dr. Ste A. Weber of the Department of Anthropology, Washington State University, Vancouver, USA, as Principal Investigator. Completed.

At about 2600 B.C., a highly organized, economically centralized and culturally integrated civilization had emerged along the floodplains of the

ancient Indus and Saraswati rivers in Northwest South Asia. Large, well-planned and walled cities like Harappa evolved from independent village farming communities, urbanization being a result of a successful food producing economy and the control of several trade routes. By the beginning of the second millennium B.C., this period of integration and centralization came to an end. With disruptions in trading networks and food supply, distinct local cultures once again began to dominate the region. If we accept this model, as most scholars do, then agricultural production was variable throughout the evolution of the Indus Civilization. If agricultural change is so closely related to culture change, then shifts in the agricultural strategy should be identifiable as village farming communities became large centralized cities and again as these cities gave way to independent localized communities.

This project will attempt to critically examine this model at a single site, that of Harappa. Its size, length of occupation (c.3300-1900 BC), large horizontal exposures, the detailed archaeological documentation and quality of organic preservation, mean it is one of the few prehistoric urban centers in South Asia where the relationship of agricultural change and culture change can be intricately addressed. The proposed project will fully implement the study of archaeobotanical remains from Harappa, and wholly integrate paleoethnobotanical research into the interpretation of the origins, evolution and character of the sites. Based on preliminary analysis of 76 flotation samples from Harappa, archaeobotanical potential is extensive and the project objectives achievable. No South Asian urban site from the third millennium B.C. has demonstrated its suitability for these kinds of paleoethnobotanical studies as Harappa. Well-preserved seeds have been recovered from over ninety percent of the samples, yielding 26,240 seeds representing 33 different edible taxa. Because of the highly organized and standardized nature of the settlements and artifacts of the Indus Civilization, models drawn from Harappa data should be applicable, and certainly testable, at other sites within this civilization.

The primary objective of this project will be to determine what shifts in plant occurrence, use and resulting agricultural strategy occurred at Harappa and how these relate to other indications of culture change. The principal focus of the study will be upon seeds and other identifiable plant parts recovered from the soil through flotation. First to be analyzed will be selected samples from among those collected and floated over the last 13 years of excavation. New samples will be collected and analyzed over the following two field seasons, producing a database that will represent all periods of occupation. The variation in the types of plants recovered, their distribution and abundance in a given sample can be attributed to a number of natural and cultural processes. Using information about the stratigraphic, architectural and artifactual contexts of recovery, together with proven methods of quantitative analysis, plant occurrence can be explained and a model for the evolution of plant use at Harappa constructed.

The project will generate the data necessary to address historical, procession and environmental questions regarding the appearance and use of plants at the site of Harappa, contribute to the understanding of cultural change in the Indus Civilization, and provide a fresh model of the relationship between agricultural practices and culture change. In so doing, the project will place paleoethnobotanical studies of the Indus Civilization on a par with other early urban civilizations around the world.

List of Research Papers Published by Prof. Dr. Khan Rass Masood

1. Published papers

- 1.1 **Masood, K.R.** and Bhutta, A.A., 1983a. *Concavigleicheiinites* gen. et. sp. nov, a new miospore genus from Datta Formation, Western Salt Range. Pakistan. *Kashmir. J. Geol.*, **1**(1): 83-186.
- 1.2 **Masood, K.R.** and Bhutta, A.A., 1983b. Amendment of the genus *Godavarisporites* Tiwari and Moiz and some miospore species from Permian sediments of the Salt Range, Pakistan. *Pb. Univ. Cent. Workshop*, **18**: 62-67.
- 1.3 **Masood, K.R.** and Bhutta, A.A., 1985. On some new Early Jurassic Miospores from Datta Formation, Western Salt Range, Pakistan. *Kashmir J. Geol.*, **3**: 37-57.
- 1.4 **Masood, K.R.**, 1987. Gulate megaspore from the late Permian Sediments, Salt Range, Pakistan. *Bull. Palynol. Paleobot.*, **1**(1): 79-86.
- 1.5 **Masood, K.R.**, Sarfraz, A. and Junaid, N., 1988. Late Paleozoic Palynofloras from middle Gondwana of Pakistan, p. 104.
- 1.6 **Masood, K.R.** and Qureshi, K.A., 1990. Cuticular Plant Microfossils from Permian of Pakistan. *Sindh Univ. Rev Jour (Sci. Sr.)*, **22**(1&2): 73-79.
- 1.7 **Masood, K.R.**, Qureshi, K.A., Sabri, S.N. and Hussain, Z., 1991a. Middle Triassic Flora and Climatic changes in the Western Salt Range, Pakistan, based on Palynological data. *Acta Sci.* **1**(2): 79-84.
- 1.8 **Masood, K.R.**, 1991b. *Gerninospora dandotensis* n.sp., a new miospore from the Permian of Salt Range, Pakistan. *Acta Scientia*, **1**(2): 141-144.
- 1.9 **Masood, K.R.** and Qureshi, K.A., 1991c. Disaccate Pollen from Permian of Pakistan. *Sindh Univ. Rev. Jour. (Sci. Sr.)*, **23**(2): 43-57.
- 1.10 **Masood, K.R.**, Qureshi, K.A. and Iqbal, J., 1992a. Palynostratigraphy of late Gondwana Glacial Deposits, Western Salt Range, Pakistan, Abstr. *1st South Asia Geological Congress, Islamabad*, p.37.

- 1.11 Qureshi, K.A., **Masood, K.R.** and Iqbal, J., 1992b. Geology and Palynostratigraphy of the Late Permian strata, Western Salt Range, Pakistan, Abst. *1st South Asia Geological Congress, Islamabad*, p.27.
- 1.12 **Masood, K.R.**, Qureshi, K.A., Iqbal, J. and Hussain, Z., 1992c. Auriculate Miospores from Early Jurassic sediments (Datta Formation), Western Salt Range, Pakistan. *Pakistan J. Geol.*, **1**(1): 52-58.
- 1.13 **Masood, K.R.**, 1992d. Middle Triassic (Anisian) Megaspore from Western Salt Range, Pakistan. *Pak. J. Geol.*, **1**(1): 66-71.
- 1.14 **Masood, K.R.**, Qureshi, K.A., Sabri, S.N., Hussain. Z. and Iqbal, J., 1992e. Stratigraphically significant Miospores in the Tredian Formation (Triassic) at Nammal Gorge, Western Salt Range, Pakistan. *Kashmir J. Geol.*, **10**: 181-192.
- 1.15 **Masood, K.R.**, Qureshi, K.A., Iqbal, M.J., Sharf, H.R. and Hussain, Z., 1992f. Stratigraphical palynology, vegetational history and Palaeoecology of Permian outcrop (Amb Formation) from Warchha Gorge, Western Salt Range, Pakistan. *Kashmir J. Geol.*, **10**: 169-180.
- 1.16 **Masood, K.R.** and Qureshi, K.A., 1993a. Trilete palynomorphs from Early Permian Sediments (Dandot Formation), Central Salt Range, Pakistan. *Pak. J. Geol.* **1**(2), **2**(1): 67-76.
- 1.17 **Masood, K.R.** and Qureshi, K.A., 1993b. New vesiculate palynormorphs from Amb Formation, Western Salt Range. Pakistan. *Pak. J. Geol.*, Vol.1, No.2, Vol.2, No.1: 77-88.
- 1.18 Parveen, M., **Masood, K.R.**, Bajwa, R., Nasim, S., Qureshi, K.A. and Hussain, Z., 1993c. Fossil fungi from Permian of Salt Range, Pakistan. Vol. **1**, No.2, Vol.2, No.1: 97-98.
- 1.19 Ellis, S., David, T. and **Masood, K.R.**, 1993. Land degradation in Northern Pakistan, *Geography*, 84-87.
- 1.20 **Masood, K.R.**, Qureshi, K.A. and Hussain, Z., 1994a. Early Permian (Asselian) Miospore assemblage from Burikhel Coal Field, Salt Range, Pakistan. *Pak. J. Geol.* **2**(2): 50-64.

- 1.21 **Masood, K.R.**, 1994b. Morphographic study of some dispersed Trilete Miospores (Sub-Infraturma Laevigati from the Permian and Jurassic Strata, Salt Range, Pakistan. *Pak. J. Geol.*, **2**(2): 65-72.
- 1.22 **Masood, K.R.**, Taylor, T.N., Homer, T. and Taylor, E.L., 1994c. Palynology of the Mackellar Formation (Beacon Super group) of East Antarctica. *Rev. Palaeobot. Palynol.*, **83**: 329-337.
- 1.23 **Masood, K.R.**, 1994d. New Saccate Pollen from Dandot Formation (Asselian), Salt Range, Pakistan. *Pak. J. Geol.*, **3**(1): 13-17.
- 1.24 David, T., Ellis, S. and **Masood, K.R.**, 1994e. Soil Formation and erosion in the Murree Hills, North East Pakistan. *Catena*, **22**: 69-78.
- 1.25 **Masood, K.R.**, Qureshi, K.A. and Naz, F., 1995a. Stratigraphical palynology of the Late Permian Strata (Chhidru Formation), Western Salt Range, Pakistan. Second South Asia Geol. Congr. Colombo, Sri Lanka, Abstr. p.115.
- 1.26 **Masood, K.R.**, Khalid, A.N., Qureshi, K.A. and Hussain, Z., 1995b. Further observations on Fossil Fungi (VA Mycorrhizae) from the Permian of Salt Range, Pakistan. *Pak. J. Geol.*, **3**(2): 7-10.
- 1.27 **Masood, K.R.**, Perveen, M., Qureshi, K.A. and Hussain, Z., 1995c. Palynomorph occurrence in relation to geochemistry in Amb Formation (E. Permian-Artiskian), Salt Range, Pakistan. *Pak. J. Hyd. Res.*, **6**(1): 62-73.
- 1.28 **Masood, K.R.** and Qureshi, K.A., 1996. Miospore Assemblage From the Late Permian Warchha Sandstone, Salt Range, Pakistan. *Sindh Univ. Res. Jour. (Sci. Sr.)*.
- 1.29 Chaudhry, M.N., Akhtar, N., **Masood, K.R** and Baluch, Z.H., 1997a. Facies, Microfacies, Paleontology. Depositional Environment and Economic Potential of Datta Formation of Early Jurassic Age from Attock Hazara and Thrust Fold Belt, Lesser Himalayas and a part of Salt Range, Pakistan. Abst. Vol.12, Himalaya Karakoram - Tibet Workshop, Rome, Italy, 1997.

- 1.30 Chaudhry, M.N., Akhtar, N. and **Masood, K.R.**, 1997b. Age, stratigraphic position and provenance of Murree Formation from Murree Hills and the syntaxial Region. Abst. 3rd Geosas Workshop.
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- 1.34 **Masood, K.R.**, Iqbal, J. and Qureshi, K.A., 1998a. Palynology of the Tobra Formation (Early Permian-Asselian) Burikhel Section, Salt Range, Pakistan. 1. Palynostratigraphy. *Pak. J. Geol.*, **8**: 60-73.
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Kawagargh Formation, Kala Chitta Range, Lesser Himalayan. *Geol. Bult. University of the Punjab, Lahore* vol. 29, 19-24.

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- 1.61 Rehman S, **Masood K.R.**, 2005. Some vesicurate pollen from Amb Formation, Western Salt Range, Pakistan. *P.J. Geol.* 12(1): 37-40.
- 1.62 **Masood K.R.** & Iqbal, F. 2005. Palynomorphs from Middle Triassic Sediments, Western Salt Range, Pakistan. *Bull. Paleobot. Palynot.* 7(1): 6-1.
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- 1.66 Shah, F.R., Ahmad, N., **Masood, K.R.**, Peralta-Videa, J.R., Zahid, D.M. and Zubair, M. 2010. **Response of *Eucalyptus camaldulensis* to irrigation with the Hudiara drain Effluent.** *Int. J. Phytoremediation*, Accepted.
- 1.67 Shah, F.R., Ahmad, N., **Masood, K.R.**, Ahmad, S.S. and Zahid, D.M. 2010. **The Hudiara Drain Wastewater Effect on the Distribution of Surrounding Herbaceous Vegetation.** *Pak. J. Bot.* Accepted.
- 1.68 Shah, F.R., Ahmad, N., **Masood, K.R.** and Zahid, D.M. 2009. Response of *Eucalyptus Camaldulensis* to Exogenous Application of Cadmium and Chromium. *Pak. J. Bot.* 43(1): 181-189.

2.	Papers in Press	03
3.	Papers Submitted to Different Journals	05
4.	Manuscripts Ready for Submission to Relevant Journal	04

Appendix – VI

SYMPOSIA, CONFERENCES ATTENDED/LECTURES DELIVERED/PAPER PRESENTED/COURSES CONDUCTED.

1. Workshop on Stratigraphy of Pakistan 20-21 Feb., 1983. 6 A
2. National Botanical Conference, 1984. 5 A
3. Seventh International Palynological Congress, University of Queensland, Brisbane, Australia, Sept. 1988. 6 A
4. First South Asia Geological Congress, Islamabad, Feb. 1992. 6 A
5. Second South Asia Geological Congress, Colombo, Sri Lanka, 1995. 6 A
6. Presented paper entitled “Late Paleozoic Palynofloras from Middle Gondwana of Pakistan”, at 7th International Palynological Congress. University of Queensland, Brisbane, Australia, Sept. 1988.
7. Presented paper entitled “Palynostratigraphy of the Gondwana Glacial Deposits of the Western Salt Range, Pakistan”, 1st South Asia Geological Congress, Islamabad, Feb. 1992.
8. Presented paper entitled “Stratigraphical palynology of the Late Permian Strata (Chhidru Formation), Western Salt Range, Pakistan”, 2nd South Asia Geological Congress, Colombo, Sri Lanka, Jan. 1995.
9. Delivered lecture (leading a group discussion on “The Morphology of Early Land Plants (Early Devonian)”, at the Bryd Polar Research Centre and Department of Plant Biology, The Ohio State University, Ohio, USA., Oct. 1992. 6 A
10. Delivered series of lectures since 1986 to to-date (except 1992-93) at Education Extension Centre, Lahore, during College Teachers’ (Lecturers/Professors) Training Course on Techniques and Methodologies regarding the Conduct of Biology Practical at College level. 5 B
11. Conducted a course along with Dr. Steven Webers of the Department of Anthropology, Washington State Univ., U.S.A., on Paleobotany regarding training of professional Archaeologists and delivered lectures also (January - March, 1997).

12. Conducted a course on “Petroleum Reservoir Characteristics” along with Dr. Aamir of Schlumberger Canada (March 2002).
13. Presented paper entitled “Palaeozoic Palynology (Permian) of the Salt Range, Pakistan. A Review”, 3rd South Asia Geological Congress, Lahore, Pakistan, Sep. 2000. 6 A
14. Delivered lecture on the Evolution of Pteridophytes at Gujranwala in Connection with the College Teacher’s Training Programme (June 2002). 5 B
15. Delivered lecture on the Evolution of Pteridophytes at Lahore in Connection with the College Teacher’s Training Programme (June 2002). 5 B
16. Attended International Conference of Plant Scientists in University of Agriculture, Faisalabad and presented a paper orally (April, 2008).
17. Attended 3-days HEC Workshop on the “Importance of Paleobotany in Plant Sciences” as a resource person and delivered two lectures including an opening key note Presentation at Institute of Plant Sciences, University of Sindh, Jamshoro, Sindh-Pakistan, October 2008.

Appendix - VII

GUIDANCE OF Ph.D. WORK

A. Awarded

1. Palynological Studies of Trees and Shrubs growing in Islamabad and their Impact on Airborne Pollen Flora – Rashid Azeem.
2. Palynology of the Middle Triassic Strata (Tredian Formation), Nammal Gorge Section, Salt Range, Pakistan – Farhat Iqbal
3. Palynological characterization of the Middle-Late Marine Gondwana Sequence (Chhidru Formation Dzulfian) Salt Range, Pakistan – Zia-ul-Rehman.
4. Palynology of Early Triassic Strata (Mianwali Formation), Nammal Gorge Section, Salt Range, Pakistan – Tahira Malik.
5. Miospore Assemblages from Dandot Formation (Permian), Eastern Salt Range, Punjab, Pakistan. – Muhammad Arshad.
6. Palynological Studies of the trees growing in Kaghan Vallay, Pakistan – Manzoor Hussain.
7. Palynology of the Subsurface Sediments, Tharparker Coal Field, Sindh, Pakistan – Hamid Saeed.
8. Palynological analysis of the Early Tertiary Sediments (Ghazij Formation) North East Baluchistan, Salt Range, Pakistan – Riffat Jabeen.
9. Palynological characterization of Patala Formation, Western Salt Range, Pakistan – Fahim Arshad.
10. Effect of Mixed Industries Effluents on Soil, Tree Biomass Production and Trace Metal Elements Uptake – Syed Fazal ur Rehman (As Co-Supervisor).

B. Submitted – Evaluation under progress – Result Awaited

1. Palynology of Gondwana Marine Sediments (Amb Formation – Artinskian) Salt Range, Pakistan – Shafiq-ur-Rehman.

C. In Progress

1. Palynology of the Early Jurassic Sediments (Datta Formation) Salt Range, Pakistan – Samia Akram.
2. Palynological Characterization of the Tobra Formation (Early Permian) Salt Range, Pakistan – Umera Dogar

Appendix - VIII

GUIDANCE OF M.Phil / MS WORK

1. Palynostratigraphy of Early Tertiary Sediments of Salt Range, Pakistan. – M. Raza Bukhari – 2006.
2. Palynology of Mid Triassic Carbonaceous Shales (Tredian formation) Western Salt Range, Pakistan. Beenish Malik – 2007.
3. Palynology analysis of rock samples (41m – 50m) from Late Permian, Marine Gondwana Sediments (Chidru Formation - Dzulfian), Salt Range, Pakistan – Umera Dogar – 2008.
4. Palynology analysis of rock samples (51m – 60m) from Late Permian, Marine Gondwana Sediments (Chidru Formation - Dzulfian), Salt Range, Pakistan – Umera Dogar – 2008.
5. Palynological characterization of Mianwali Formation (Mittiwali Member – 11m-15m), Nammal Gorge, Salt Range, Pakistan. – Naila Rasul – 2011.
6. Palynological characterization of Tredian Formation (Khatkiara Member – 01m-05m), Nammal Gorge, Salt Range, Pakistan. – Nazim Hussain – 2011.
7. Palynological analysis of Early Triassic Mianwali Formation (Mittiwali Member – 01m-05m), Nammal Gorge, Salt Range, Pakistan. – Rabia Farooq – 2011.
8. Palynological analysis of Early Triassic Mianwali Formation (Mittiwali Member – 06m-10m), Nammal Gorge, Salt Range, Pakistan. – Maryam Ilyas – 2011.
9. A comparative palynological analysis of some rock samples from Mid Triassic Tredian Formation (Landa Member) from Nammal and Zaluch Gorge, Salt Range, Pakistan. – Sadia Saghir – 2011.
10. Palynological characterization of Tredian Formation (Landa Member – 01m-05m), Zaluch Gorge, Salt Range, Pakistan. – Sumera Kokab – 2011.
11. Palynological characterization of Early Permian Tobra Formation, Sirin Gorge, Western Salt Range, Pakistan. – Erum Liaqat – 2011.

Appendix - IX

GUIDANCE OF MASTER'S WORK

1. Stratigraphical Palynology of the Permian Outcrop (Amb Formation) from the Western Salt Range, Pakistan – Junaaid Nasir Khan – 1985-1987
2. Stratigraphically significant Miospores in the Tredian Formation (Triassic) at Nammal Gorge, Salt Range, Pakistan – Sajida Nasim Sabri – 1988-1989
3. Palynostratigraphy and Paleoecology of the selected Lower Permian outcrop of the Western Salt Range, Pakistan – M. Javed Iqbal – 1988-1990
4. Taxonomy and distribution of palynomorphs in the Early Triassic Strata of the Salt Range, Pakistan – M. Ashraf Mumtaz – 1988-1989
5. Palynology of the selected Upper Permian outcrop of the Western Salt Range, Pakistan – Farah Naz – 1990
6. Palynomorph occurrence in relation to Geochemistry in Datta Formation, Western Salt Range, Pakistan – Rubina Javed – 1989-1991
7. Palynomorph occurrence in relation to Geochemistry in the selected Permian outcrop (Amb Formation), Central Salt Range, Pakistan – Mussarrat Parveen 1989-1991
8. Early Triassic palynology (Mianwali Formation) Western Salt Range, Pakistan with comments on Depositional Environment & Palaeoclimatology – M. Siddique 1993-1995
9. Early Jurassic Palynolog (Datta Formation) Western Salt Range, Pakistan with comments on Depositional Environment & Organ Thermal Maturity – Sidra-tul-Muntaha – 1993-1995
10. Palynological and sedimentological analysis of the Drill Hole Core from Sinhar Vikian Varvai Block, Thar Coal Field, Sindh, Pakistan – Fauzia Humma
11. Palynology of Ghazij Formation, North East Baluchistan, Pakistan – Riffat Jabeen
12. Palynostratigraphy of the selected early Permian outcrop (Dandot Formation) Pidh, Eastern Salt Range, Pakistan – Saadia Anjum

13. Palynostratigraphy of Early Gondwana Glacial Sediments (Tobra Formation) Pidh, Eastern Salt Range, Pakistan – M. Tahir 1994-1996
14. Subsurface Palynology of Tertiary Sediments, Thar Coal Field (Well No. STR-TP), Sindh, Pakistan – Sabahat Kazmi – 1995-1997
15. Subsurface Palynology of Tertiary Sediments, Thar Coal Field (Well No. STP), Sindh, Pakistan – Farah Ashraf – 1995-1997
16. Palynology of Gondwana Glacial Deposits, Near Burikhel, Western Salt Range, Pakistan Lower Half (33 meters) – Sumera Kanwal – 1995-1997
17. Palynology of Gondwana Glacial Deposits, Near Burikhel, Western Salt Range, Pakistan Upper Half (55 meters) – Saeed Ahmed Saeed – 1995-1997
18. Palynology and correlation of Tertiary Carbonaceous Strata, Eastern Salt Range, Pakistan – Rifqa Asraf – 1997-1999
19. Preliminary Sporological Analysis of Lockhart Formation (Upper Half), Nammal Gorge, Western Salt Range, Pakistan – Shaista
20. Preliminary Sporological Analysis of Lockhart Formation (Lower Half), Nammal Gorge, Western Salt Range, Pakistan.
21. Preliminary Sporological Analysis of Some Shales from Hango Formation, Western Salt Range, Pakistan.
22. Palynology of Tertiary Subsurface sediments (Well No. 8), Sindh, Pakistan – Iram Nisar – 1999-2001
23. Palynology of Tertiary Subsurface sediments (Well No. 10), Sindh, Pakistan – Faiqa Khan – 1999-2000
24. Miospore Analysis of upper Productus Shaly Limestone (Upper Half), Nammal Gorge Section, Salt Range, Pakistan – Saima Siddique – 2000-2002
25. Palynomorph assemblage from Upper Productus Sandy Limestone (Lower Half), Nammal Gorge Section, Salt Range, Pakistan – Saadia Salah-ud-Din – 2000-2002
26. Palaeopalynology of Lower Productus Limestone (Upper Member), Zaluch Gorge Section, Salt Range, Pakistan – Asma Aslam – 2000-2002

27. Taxonomy and distribution of miospores in the Lower Productus Limestone (Lower Member), Zaluch Gorge Section, Salt Range, Pakistan – Zakia Bano – 2000-2002
28. Palynology of Tertiary Sediments (Patala Formation), Nammal Gorge Section, Salt Range, Pakistan – Khajista Jabeen 2000-2002
29. Palynological Characterization of the Early Tertiary Sediments (Hangu Formation, Lower Member) Western Salt Range, Pakistan – Hina Rani – 2001-2003
30. Palynological Characterization of the Early Tertiary Sediments (Hangu Formation, Middle Member) Western Salt Range, Pakistan – Saima Noreen Gul – 2001-2003
31. Palynological Characterization of the Early Tertiary Sediments (Hangu Formation, Upper Member) Western Salt Range, Pakistan – Samia Anwar – 2001-2003
32. Palynological analysis of Rock Samples from Amb Formation (01m - 20m), Western Salt Range, Pakistan – Arooj Naseer – 2002-2004
33. Palynological analysis of Rock Samples from Amb Formation (21m - 40m), Western Salt Range, Pakistan – Syeda Humera Bashir – 2002-2004
34. Palynological analysis of Rock Samples from Amb Formation (41m - 58m), Western Salt Range, Pakistan – Sumera Yaqoob – 2002-2004
35. Miospore distribution across Patala Formation (Lower half 02-04 meters), Western Salt Range, Pakistan – Afshan Aziz – 2003-2005
36. Palynomorph distribution across Patala Formation (Middle Section 50-55 meters), Western Salt Range, Pakistan – Amna Khatoon – 2003-2005
37. Palynological characterization of Early Jurassic Strata (Datta Formation, Lower half 0.5 meters), Western Salt Range, Pakistan – Sahrish Maroof – 2004-2006
38. Palynological characterization of Early Jurassic Strata (Datta Formation, 6-10 meters), Western Salt Range, Pakistan – Fariha Hameedy – 2004-2006
39. Palynological characterization of Chhidru Formation (35m – 40m), Western Salt Range, Pakistan – Erum Liaqat – 2005-2007

40. Palynological characterization of Chhidru Formation (60m – 64.5m), Western Salt Range, Pakistan – Zarghona Rao – 2005-2007.
41. Palynology of Mid Triassic Carbonaceous Shales (Tredian Formation) Western Salt Range, Pakistan – Beenish Malik – 2004-2006.
42. Palynology analysis of rock samples (41m – 50m) from Late Permian Marine Gondwana Sediments (Chhidru Formation - Dzulfian), Salt Range, Pakistan – Umera Dogar – 2005-2007.
43. Palynology analysis of rock samples (51m – 60m) from Late Permian Marine Gondwana Sediments (Chhidru Formation - Dzulfian), Salt Range, Pakistan – Samia Akram – 2005-2007.
44. Palynological characterization of the Early Permian Tobra Formation (60m to 75m), Western Salt Range, Pakistan – Hamna Suleman – 2006-2008.
46. Palynological characterization of the Early Permian Tobra Formation (80m to 104m), Western Salt Range, Pakistan – Sumera Tabassum – 2006-2008.
47. Palynological characterization of the Early Permian Tobra Formation (6m to 30m), Western Salt Range, Pakistan – Asma Rashid – 2006-2008.
48. Palynological characterization of the Early Permian Tobra Formation (35m to 55m), Western Salt Range, Pakistan – Kaniz Fatima – 2006-2008.
49. Preliminary Palynological analysis of early Paleocene Carbonaceous Shales from Nammal Gorge, Western Salt Range, Pakistan – Sobia Sarwar – 2007-2009.
50. Palynomorph Assemblage from early Jurassic sediments, Western Salt Range, Pakistan - Yumna Tabassum – 2007-2009.
51. Palynology of Paleocene/Eocene Coal Seams from Patala Formation, Eastern Salt Range, Pakistan - Amina Zafar – 2007-2009.
52. Palynology of Early Permian Coal, Western Salt Range, Pakistan - Mehwish Naseem – 2007-2009.

53. Palynology of Early Triassic Mianwali Formation (01m – 03m), Zaluch Gorge, Salt Range, Pakistan. – Maria Rafique – 2009-2001.
54. Palynology of Chhidru Formation (Late Permian), Nammal Gorge, Salt Range, Pakistan. – Syeda Iram Ali – 2009 -2011.
55. Palynology of Early Triassic Mianwali Formation (04-06m), Zaluch Gorge, Salt Range, Pakistan. – Amber Abdul Haq – 2009-2011.
56. Palynology of Chhidru Foramtion, Chhidru Gorge, Salt Range, Pakistan. – Kausar Latif – 2009-2011.
57. Palynology of Tredian Foramtion (Landa Member – 01m-03m), Zaluch Gorge, Salt Range, Pakistan. Madiha Tariq – 2009-2011.

Appendix – IX

OTHER ACADEMIC AND SCHOLASTIC DISTINCTIONS

1. Topped the list in M.Sc. (Botany) examination in the University academic session 1975-77, securing 84% overall percentage marks, secured grade “A”.
2. Name enlisted in the **Roll of Honour** in the B.Sc examination on account of meritorious work in Botany and Zoology and was awarded honourable mention certificates.
3. Stood First in the subjects of Botany and Zoology in the B.Sc. examination and was awarded **Special Scholarships** in the above mentioned subjects.
4. Awarded **Special Certificate** for winning scholarships and roll of honour in the B.Sc. examination.
5. **First Prize** in science exhibition for TAXIDERMY in People’s Festival (1973).
6. **First Prize** in hobbies exhibition held under the auspices of Junior Biology Association (1972) in the Forman Christian College, Lahore.
7. **First Prize** in the science Fair (1973) For TAXIDERMY, held under the auspices of the Board of Intermediate and Secondary Education, Lahore, Pakistan.
8. Awarded **Certificate of Merit** on the occasion of Valedictory function, for excellent performance in TAXIDERMY.
9. Awarded certificate of merit for **Photography** from Senior Biology Association, F.C. College, Lahore (1973).
10. **Certificate of Merit** from Senior Biology Association in recognition of excellent performance in TAXIDERMY.
11. Awarded **Certificate of Merit** for special demonstration in Civil Defense (1968), Garrison Boys High School, Lahore Cantt.
12. Elected as **Joint Secretary**, Senior Biology Association (1973). F.C. College, Lahore.
13. Elected as **President**, Botanical Society, University of the Punjab, Lahore, Pakistan of the session 1976-77 and arranged nine seminars on different aspects of Biological Sciences in Pakistan.