

ANNUAL REPORT

2009



PIR MEHR ALI SHAH

**ARID AGRICULTURE UNIVERSITY
RAWALPINDI**

CONTENTS

PREFACE	03
ACADEMICS	04
ADMINISTRATIVE	11
FINANCIAL RESOURCES	12
DEVELOPMENT PROJECTS	13
DELEGATES & VISITS	14
SEMINARS, WORKSHOPS AND CONFERENCES	17
STUDENTS EXTRA CURRICULAR ACTIVITIES	22
SPORTS ACTIVITIES	23
UNIVERSITY PUBLICATIONS	24
FACULTY PUBLICATIONS	25

P R E F A C E

During the year 2009, Pir Mehr Ali Shah (PMAS) Arid Agriculture University has made substantial efforts to improve academic as well as Research activities alongwith financial resources. Various teaching departments were up graded/ strengthened through the development of infrastructure, procurement of sophisticated scientific equipments and purchase of books etc. one R & D Project worth Rs. 38.885 Millions was completed in the year 2009 and three projects worth Rs. 129.688 were initiated. The faculty members under took sponsored Research Projects worth Rs. 58.849 million funded by various funding agencies.

The Hydroponics Research Farm (Farmer's Marketing (Pvt) Limited was taken into possession during this year from a reputable foreign organization. This Hydroponics facility is situated near Rawat on main G.T. Road, Rawalpindi. This is one of the unique facilities which possesses all cutting edge technology for production, Packaging and marketing of Greenhouse Vegetables Crops, grown on solution culture only.

The Faculty was upgraded and fifteen new faculty members were inducted to overcome staff shortage for increase trend of the student enrollment.

A Student Resource Centre was established to facilitate the students problems for the award of scholarship, employment and unforeseen emerging issues.

Twenty One National and International workshop/ seminars/ synopsis/conferences were organized/arranged at the university campus to share/transfer knowledge with in the country and globally.

The linkage between faculty, Industry and farming community has been further promoted to ensure the penetration and achievements of objectives of the university.

Memorandum of Understandings with various national and International organizations were signed for academic and Research were signed for academic and Research sharing. The provision of better Research facilities encouraged the faculty to publish 212 Research Publications in National and International reputed journals.

A C A D E M I C S

ESTABLISHMENT OF STUDENT RESOURCE CENTER

The name of University Placement Bureau is substituted with Student Resource Centre in order to generate students resources in the form of employment, local scholarships, financial aids and international scholarships. This center will help the students of the university to attenuate their academic quench. The students resource center also act as focal office of the indigenous scholarships for M.Phil and Ph.D scholars of the University. The SRC will also maintain a data base for the alumni students.

ESTABLISHMENT OF FARM RESEARCH LABORATORIES AT KOONT

Eight fields research laboratories were established in the field of Agronomy, Horticulture, Plant Breeding and Genetics, Forestry and Range, Plant Pathology, Entomology and Soil Sciences respectively. These laboratories are primarily meant for academic research at the Research Farm

APPROVAL OF THE FIRST PATENT OF PMAS-AAUR

The Patent Office Government of the Pakistan has approved the first ever Patent from PMAS-AAUR in its history, which was filed by Prof. Dr. Muhammad Saqlan Naqvi, Department of Biochemistry pertaining to the sequence of the promoter region of OsRGLP2 gene which is capable of regulating gene expression under stress condition.

STRENGTHENING OF DEPARTMENT OF WILDLIFE MANAGEMENT

The department of Wildlife Management is being strengthened by procuring field and laboratory equipments, renovation of existing laboratories and faculty development. This will enhance the existing academic capabilities of the department and excellence in research activities.

UP-GRADATION/ STRENGTHENING OF LIBRARY FACILTIES.

The University Library is being up graded/strengthened through a development project funded by Higher Education commission. This project will lead to enhance the existing capabilities/ competencies of the faculty and students in order to attain the academic/Research Excellence.

ESTABLISHMENT OF R&D FACILITIES IN HYDROPONICS AT FMP

PMAS-AAUR has taken the possession of an internationally recognized Hydroponics farm at Rawat Rawalpindi. This is one of the unique facilities which have got all cutting edge technology for production, packaging and marketing of Green houses crops, grown on solution culture only. Hydroponics Plant carries on this business from its five acres green houses located in Rawalpindi, which has integrated facilities that include cold storage, packing and shipping facilities, offices and residences, over an area of 13.5125 acres situated at Kalyam Mughal, Main G.T Road, Rawalpindi.

There are infrastructure, green houses, and tunnels & costly hydroponics equipments meant for execution of the production activity of the center. It is imperative to mention here that students of Agriculture, Sciences and Management Sciences will directly get benefit out of this proposed project.

ESTABLISHMENT OF VETERINARY FIELD CLINIC AT G.T ROAD RAWAT

A veterinary field clinic has also been established at G.T Road Rawat to cater the needs of livestock farmers in the arid area (Potowar area). The veterinary officer of the field clinic will visit the near by agriculture areas in order to equip the livestock farmers against animal / livestock diseases. Further more this clinic will also act as mini hospital for the DVM students.

ESTABLISHMENT OF PET CLINIC AT FACULTY OF VETERINARY AND ANIMAL SCIENCES

The Pet Animal Clinic was established during this year at Faculty of Veterinary and animal Sciences. This clinic will act as teaching hospital for students of DVM. This clinic will also cater to the needs of health and management of small animals owned by the residence of the twin cities of Islamabad and Rawalpindi. The regular clinical examination and minor surgical operations of Cats and Dogs are being carried out at the clinic.

ESTABLISHMENT OF DAY CARE CENTER

For working parents of today - usually better educated than their parents- are more aware of these factors and wanting the best for their children, are demanding the

structured pre-school education and learning stimulation offered by modern day care centers. This is an honest desire of the parents of pre-school age children. The day care center was established to facilitate the faculty members, Ph.D Scholars and employees of the university.

SHORT COURSES

In addition to degree programmes, the Faculty of Crop & Food Sciences, the Faculty of Forestry, Wildlife & Environment and Faculty of Veterinary & Animal Sciences organized many short courses in the past year. Two hundred participants were trained in the following courses.

❖ Field Assistants course	04 months
❖ Tunnel Farming	01 week
❖ Tissue culture Laboratory Technician & Nursery Management	01 week
❖ Professional Floristry	02 weeks
❖ Computer Application	12 Weeks
❖ English Language Course	08 Weeks
❖ Veterinary Assistant	12 Months

LINKAGE WITH INTERNATIONAL ORGANIZATIONS

The University signed five memorandum of understanding (MoU) with the following International/national organizations to strengthen the academic and research activities.

- Snow Leopard Trust, USA
- University of Western Australia
- Massey University, New Zealand
- Rawalpindi Chamber of Commerce & Industry, Rawalpindi.
- International Livestock research Institute (ILRI), Nairobi, Kenya

FACULTY DEVELOPMENT

Faculty Development is a continuous process in order to achieve academic excellence. To improve academic program, the addition of new faculty is a regular feature at the University. During 2009, PMAS-AAUR management has great coherence, liaison and

coordination with faculty in enhancing quality educational & research opportunities. Resultantly, PMAS-AAUR is producing useful & trained human resource in specialized sectors.

Following staff was appointed in various departments on the recommendation of the selection board.

Department	Lecturer	Assistant Professor	Associate Professor	Professor	Total
Crop & Food Sciences	4	0	0	1	05
Sciences	3	1	0	1	05
Range Management & Forestry	1	0	0	0	01
Veterinary & Animal Sciences	0	0	0	0	00
University Institute of Information Technology	4	0	0	0	04
University Institute of Management Sciences	0	0	0	0	00
Woman Division	0	0	0	0	00
TOTAL	12	01	00	02	15

STUDENT ENROLLMENT

The student strength of the university is increasing day by day as reflected in the table below.

S No	Name of Degree	2007	2008	2009
01	Graduates	1677	1967	2291
02	Post Graduates	2369	2566	2564
03	Doctoral	137	144	160
	Total	4183	4677	5012

DOCTORAL /POST DOCTORAL TRAINING / SHORT-TERM TRAINING

The faculty members were encouraged to improve their qualifications and visit universities abroad to update their knowledge and transfer technical know how back home from international universities/institutes. In the objectivity, three faculty members completed Ph. D in the fields of Forestry, Food technology & Agri-Economics and five faculty members obtained post-doctoral fellowship from HEC and executed research work in UK, Canada & Australia. Moreover, three faculty

members proceeded on short-term trainings/courses in Japan, South Korea & U.K. In addition to above, seven faculty members have initiated PhD in Information Technology, Horticulture, Education, Statistics and Management sciences.

RESEARCH FOCUS

University faculty focused their research activities on the issues of farming community of Barani areas in general and potohar in particular. These included projects related to soil conservation, weed management, drought tolerance studies in wheat through genetic engineering and environmental studies to control pollution. The following Research projects were operational during 2009.

- Selection of characterization of starter culture for fermented milk products
- The epidemiological studies on bovine fasciolosis leading to the development of forecasting model to assess site specific risk on Indus river basin in Punjab
- Developing high trait hybridized/mutant scavengers chicken for rural poultry
- Study of polyphenol oxides activity and its association with molecular markers in different r wheat genotypes
- Evaluation of Soil Moisture Depletion Pattern, Soil Microbial activity & biomass under different types of terracing in Pothwar
- Allelopathic crop residue use for weed management in rainfed areas of Punjab
- Exploring of genetic variation for drought tolerance in wheat by using physiological biochemical attributes
- Conservation of Urial through semen preservation
- Virulence Analyses of *Xanthomonas Campestris* pv *Sesami* and *Pseudomonas Syringae* pv *sesame* the Causal organisms of sesame (*Sesamum INDICUM* L) bacterial blight
- Characterization and Quantification of Soil Iron Oxides and their effect on Phosphorus Sorption
- Tissue culture and transformation studies in Banana for disease eradication/resistance
- Selection of Probiotic cultures for yogurt making
- Evaluation of Mungbean cultivars for the response to *Rhizobium* in Potohar region

- Impact of tillage system Legumes and mulches on soil profile moisture dynamics and wheat production
- Characterization to determine the adaptive role of Dehydrins under drought stress in wheat
- Development of high yielding rust tolerant wheat Genotypes by using molecular markers
- Multiplex Immunoassays for detection of TB
- Optimization of Water use by Native Plants in arid lands facing global change and Desertification
- Isolation of Plant Growth Promoting Rhizobacteria (PGPR) from Legumes Rhizosphere and their in N₂ Fixation by Legumes under Rainfed Conditions of Pothwar
- Repercussion of depletions in vulture populations on the ecology of the Pothwar Region
- Isolation / Identification of Pathogen Bacteria from Buffalo Bulls Semen – development of high efficiency antibiotic combination to improve fertility rate
- Identification of Chemically defined extenders for cryo preservation of buffalo bull spermatozoa
- Detection of Multiple Anthelmintic Resistance of Nematodes in Small Ruminants Grazing in Barani Region
- Phenotypic plasticity of Safflower (*Carthamus Tinctorius*) in response to environment and integrated nutrient management
- Distribution and Management of Root-Knot Nematodes (*Meloidogyne* spp)

ESTABLISHMENT OF HYDROPONICS RESEARCH & TRAINING CENTER

A hydroponics system for growing vegetables is basically a system where plants can be grown without soil or supported in a soil less growing medium, through which nutrient rich water is passed. This is usually achieved through a system of tubes, which are filled with hydroponics medium such as perlite. Nutrient rich water is passed through the tubes (flowing through the bottom 1/4) and plants are suspended through holes in the top of the tube with their roots in the growing medium.

PMAS-AAUR has taken the possession of an internationally recognized Hydroponics farm at Rawat Rawalpindi. This is one of the unique facilities which have got all

cutting edge technology for production, packaging and marketing of Green houses crops, grown on solution culture only. Hydroponics Plant carries on this business from its five acres green houses located in Rawalpindi, which has integrated facilities that include cold storage, packing and shipping facilities, offices and residences, over an area of 13.5125 acres situated at Kalyam Mughal, Main G.T Road, Rawalpindi.

There are infrastructure, green houses, and tunnels & costly hydroponics equipments meant for execution of the production activity of the center. It is imperative to mention here that students of Agriculture, Sciences and Management Sciences will directly get benefit out of this proposed project.

This project is commercial in nature and will generate a lot of benefits for the country, which are as under:

- Commercial production of vegetables on large scale
- Employment generation.
- Foreign Exchange earning.
- Increase in average yield of vegetables i.e. for tomato from 10.1 to 500 ton per hectare.
- Optimization of inputs and outputs in hydroponics production.

PMAS-AAUR is mandate to produce high quality agricultural scientists and to form an organized scientific infrastructure for teaching and research, for the development of arid areas of the country. The University will now be able to produce highly skilled manpower, trained on production of green house crops, which is a need of time. The University will also provide a leadership role and advisory services for tunnel production and green house crops that will ultimately beneficial for students, researchers and farmer community.

RESEARCH PROJECTS

The PMAS-AAUR Faculty also undertook Research Projects in addition to teaching assignments. These projects are sponsored by different funding/donor agencies. During 2009, the faculty had fetched 39 Research Projects for Rs. 58.849 millions. The detail of Research Projects is given below: -

S No	Name of Funding Agency	No of Projects	Total Amount Rs. in Million
1.	Higher Education Commission	12	37.211
2.	Pakistan Science Foundation	04	2.754
3.	Pakistan Agriculture Research Council	01	1.913
4.	Ministry of Science & Technology	00	0.000
5.	Endowment Fund UAF	01	1.999
6.	International Funding Agencies	02	12.612
7.	University Own Resources	19	2.360
	Total Rs. In Million	39	58.849

So far 53 Research projects were successfully completed by the faculty of this university. The detail is as under:

S No	Name of Funding Agency	No of Projects	Total Amount Rs. in Million
1.	Higher Education Commission	03	2.876
2.	Pakistan Science Foundation	06	4.399
3.	Pakistan Agriculture Research Council	07	15.499
4.	Ministry of Science & Technology	01	29.625
5.	University Own Resources	36	2.64
	Total Rs. In Million	53	55.039

ADMINISTRATIVE

In pursuant to good governance and transparency in the system, the meetings of administrative bodies of PMAS-AAUR were held regularly under the Chairmanship of the Vice Chancellor. A participatory approach was adopted in decision making and various academic, developmental and administrative decisions were taken in consultation with all members of committees constituted for the purposes and thereafter, approved by the statutory bodies.

UNIVERSITY SYNDICATE

The Syndicate is the highest executive body of the University, which holds its meeting as and when required to take up & ratifying the decisions of lower bodies and embark upon decisions of its own. During the reporting period, 04 Syndicate meetings

were arranged and necessary decisions were taken in the best interest of PMAS-AAUR.

ACADEMIC COUNCIL

In year 2009, one meeting of Academic Council was conducted, wherein revised/amended and new curricula for under-graduate and post-graduate studies were discussed and approved. The general rules and regulations pertaining to academic and administration were also argued and the decisions were made for implementation.

FINANCE & PLANNING COMMITTEE

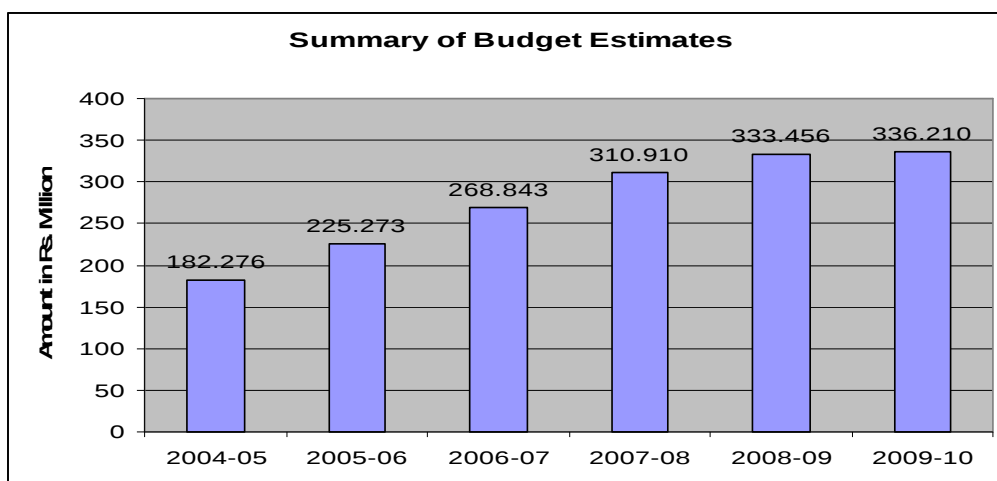
The Finance & Planning Committee collaborated twice in 2009 for resolution of financial issues and authorization of budget. After interactive sessions by the members, budget for the year and other related financial matters were approved.

ADVANCED STUDIES & RESEARCH BOARD

In the academic year 2009, Advanced Studies & Research Board was collaborated in four series of meetings; the board afforded approvals and advised amendments, where necessary, on admission to post-graduate level, synopsis and research titles of post-graduate students, rules and regulations. The Board also scrutinized various research projects and approved/referred for revision.

FINANCIAL RESOURCES

Utmost efforts had been put in to enhance the financial resources of the University. The total budget of PMAS-AAUR for the year 2009-10 was escalated up to Rs. 336.207 millions in comparison to correspondence year's budget amounting to Rs: 333.456



millions.

DEVELOPMENT PROJECTS

The University carried out various plans, formulated strategies & putting in strenuous efforts to enhance the financial resources from avenues outside PMAS-AAUR. Funds were also fetched from the Higher Education Commission of Pakistan under different schemes for establishing/strengthening new departments at PMAS-AAUR. These efforts will create more research facilities for the students and the faculty members.

Development Projects (Completed)	Cost (million Rs.)
• Strengthening of Sports facilities at UAAR	38.885
Total	38.885

Development Projects (On-Going)	Cost (million Rs.)
• Establishment of Faculty of Veterinary & Animal Sciences	468.620
• Strengthening of Department of Entomology	34.783
• Establishment of University Institute of Biochemistry & Biotechnology	358.619
• Development On Farm Students Research Facilities	343.224
• Establishment of R&D Facility in Hydroponics At PMAS-AAUR	52.546

• Strengthening of Department of Wildlife Management	36.141
• Strengthening/ Up gradation of Library Facilities at PMAS-AAUR	41.021
Total	1334.954

Development Projects (Submitted)	Cost (million Rs.)
• Human Resource Development at PMAS-AAUR	487.000
• Provision and Up Gradation of Common Facilities at PMAS-AAUR	46.502
• Strengthening of University Institute of Management Sciences	59.403
• Strengthening of Department of Plant Pathology	43.941
Total	636.846

DELEGATES & VISITS

1. Syed Moazzam Nizami, Assistant Professor, Department of Forestry & Range Management visited school of Forest & Ecosystem Science, University of Melbourne, Australia. He stayed there from June 17 to December 31, 2008 under International Research Support Programme of Higher Education Commission of Pakistan.
2. The Department of Wildlife Management conducted a study tour on 16-17 January 2009 to the Lakes of Salt Range. The group visited Kallar Khar, Khabbeki, Jahlar and Ucchali Lakes.
3. The Department of Entomology conducted a study tour for 5th and 7th semester students on 15-17 January 2009 to visit the Department of Entomology at UAF, Ayub Agriculture Research Institute Faisalabad. Insect Museum, Department of Zoology Punjab University Lahore and the School of Biological Sciences Punjab University Lahore.
4. The Faculty of Veterinary and Animal Science conducted a study tour for the students of 5th and 7th semester on January 16-18, 2009 to visit Fodder Research Institute, Sargodha, University of Agriculture, Faisalabad, Livestock Production and Research Institute, Bahadarnagar, Okara and Buffalo Research Institute, Pattoki.
5. Mr. John Shumaker, Chief of Party, Financial Assistance Development Project & Higher Education Commission, Ms. Aabira Sher Afghan, Education Management Specialist, U.S Agency for International Development and Syed Fauad Haider, Project Manager, Higher Education Commission visited PMAS-AAUR regarding US-Needs Based Scholarship Programme on February 11, 2009.
6. Dr. Ousmane Kane, Executive Director, Agrican Regional Center for Technology, Senegal, along with Dr. Anwer Naseem, Chairman National Commission on Biotechnology & Advisor COMSTECH visited Pir Mehr Ali Shah, Arid Agriculture University, Rawalpindi (PMAS-AAUR) on February 12, 2009.
7. 65 Students of Department of Food Technology along with their teachers Prof. Dr. Muhammad Shahbaz Bhatti, Assistant Prof. Dr. M. Anwaar and Lecturer Ms. Farzana Siddique participated in 19th all Pakistan Food Science Conference which was held on 21st February 2009 at PCSIR Laboratories,

Lahore. In the tour group also visited Asian Foods (Confectionery) and K & N'S Food Industry (Meat), Haleeb Foods & Mitchell's Food Industry (Dairy, Fruits and vegetables Processing), Walls Ice Cream, Reem Rice Industry Muridkay and Noon Sugar Industry Bhalwal.

8. A Conference was organized on April 08, 2009 with collaboration of Italian Cooperation Office and Pakistan Oilseeds Development Board (PODB), Italian Ambassador, Vincenzo Prati was the chief guest at the inaugural session of the conference. Federal Secretary, Ministry of Food & Agriculture, Mr. Muhammad Zia-ur-Rehman and Mr. Kayser Ali shah, Managing Director, Pakistan Oilseed Development Board (PODB) also addressed on the occasion.
9. Punjab Minister for Agriculture Malik Ahmed Ali Aulakh visited PMAS-AAUR on April 10, 2009. On the occasion, Dr. Khalid Mahmood Khan ,the vice-chancellor, Director General Agriculture (extension) Dr. Anjum Ali, Director Soil Conservation Malik Abdul Sattar, Director BaraniAgriculture Research Institute Chakwal Dr. Abid Mahmood, Director Soil and Water Research Institute Chakwal, Chaudhry Mohammad Akram, EDO Agriculture Rawalpindi Hameedullah Shah and various heads of Agriculture Department were also present.
10. Rawalpindi Chamber of Commerce and Industry (RCCI) delegation headed by Syed Asad Mashadi, President RCCI visited the University on May 20, 2009 to explore the opportunities for the enhancement of the capability of younger generation.
11. An Italian Delegation, Comprising of Mr. Raffaele Del Cima, Mr. Paolo Antonion, Director General, Ministry of Foreign Affairs, Italy and Luciano Conticini, Director Technical, Institute of Agronomy, Italy visited PMAS-AAUR and discussed the academic and research cooperation with University's Vice Chancellor.
12. Prof. S. M. Saqlan Naqvi, Chariman Department of Biochemistry, visited Turkey from 5th –15th July 2009. He was invited as a speaker in the International Conference on Plant and Environment 2009 held in Erciyes University. Delegates including two Nobel Laureates from 42 different countries attended the conference. Following the conference Dr. Naqvi also visited Ankara University, Middle East Technical University and Ghazi University to explore avenues for future collaboration.

13. Mr. Nazar Muhammad Gondal, Federal Minister for Food and Agriculture was chief guest at the tomatoes picking ceremony held at Farmer Market Private Limited (FMP)-a hydroponics plant at PMAS-Arid Agriculture University Rawalpindi (AAUR) on August 31, 2009. The Higher Education Commission (HEC), Executive Director, Dr. Sohail H. Naqvi appreciated the University's efforts.
14. Prof. Dr. Khalid Mahmood Khan S.I. the Vice Chancellor PMAS-AAUR visited United states of America on study tour under Higher education Commission, financial Aid Program (FAD) in November 2009.
15. Prof. Dr. Khalid Mahmood Khan S.I. The Vice Chancellor visited Malaysia to attend the 6th Executive committee and 5th General Assembly Meeting of NASIC Shahalam, Malaysia on 14-12-2009.
16. Prof. Dr. Khalid Mahmood Khan S.I. the Vice Chancellor visited Malaysia to attend the 17th Conference of the Islamic world academy of sciences Sclangor, Malaysia on 14-12-2009 to 17-12-2009.

SEMINARS, WORKSHOPS & CONFERENCES

Seminar, Workshops and Conferences are regular feature of universities where experts from various fields are invited to share their experience with faculty, students & various fields are invited to share their experience with faculty, students & researchers on current issues of international and national levels. Such an activity is important for research and academic development of an institution as it provides guidelines for policy development at national level. During 2009, 17 International / National Conferences/ Seminars/ Workshops were held at PMAS-AAUR or attended by Faculty, apart from departmental seminars. A brief detail of each is given below:

1. Miss Saddiqa, Director International Center of studies Exchanges, Islamabad, delivered a seminar on December 31, 2008 at University on “Post Graduate Education Opportunities in State University in Germany”.
2. The Department of Wildlife Management organized two seminars in January 2009. The seminar was delivered by an eminent marine biologist, Dr. Hina Saeed, from National Institute of Oceanography, Karachi, Mr. Nausherwan, Lecturer, Pakistan Forest Institute, Peshawar, introduced his institution to the students and faculty members of this Department. The second seminar was organized in collaboration with Pakistan Wetlands Programme (PWP) and WWF-Pakistan, Islamabad on January 12th, 2009. Mr. Richard Garstang, Chief Technical Advisor/National Programme Manager, PWP gave an impressive insight into the biodiversity of Pakistan. Dr. Ijaz Ahmad, Deputy Director General, WWF-Pakistan, Islamabad, discussed biodiversity conservation issues & Challenges in Pakistan. Mr. Ahmad Khan, Regional Programme Manger, PWP, delivered an informative lecture on “Dynamics of wetlands ecology”. More than 40 students and faculty members participated in this 2^{1/2} hours long seminar.
3. The Faculty of Veterinary and Animal Sciences at PMAS-AAUR arranged a seminar on “prevention and Control of Avian Influenza” on January 28, 2009.
4. University Institute of Information Technology (UIIT) organized three seminars, in which eminent scholar delivered lecturer on diverse topics. On the 1st seminar, Prof. Fazal-e-Haque was the speaker and the topic was “Resume and Cover Letter Writing”. In second seminar, Dr. Mazhar Jameel Ph.D. (USA) was the guest speaker. His discussion agenda was “What is

Professionalism”. Third seminar was conducted by Mr. Ansir A. Rajput MBA (Babson College, USA) his topic was “Entrepreneurship Business Management”. He highlighted the importance of small business enterprises in Pakistan.

5. The Department of Plant Breeding and Genetics on Wheat Production Security in Pakistan arranged a seminar on February 4, 2009. The guest speaker was renowned scientist Dr. Abdul Mujeeb Kazi, Project Director in Wheat Wide Crosses Programme at history, importance and future strategies of its production. The Dean/ Director, Faculty members and postgraduate students of the University, attended seminar.
6. Pir Mehr Ali Shah Arid Agriculture University Rawalpindi (PMAS-AAUR) in collaboration with Italian Cooperation Office and Pakistan Oilseed Development Board (PODB) organized a national conference on “Olive Oil Production in Pakistan; Result and way forward” on April 08, 2009. Italian Ambassador, Vincenzo Prati was the chief guest at the inaugural session of the conference. Federal Secretary, Ministry of Food & Agriculture Mr. Muhammad Zia-ur-Rehman, in his address said that Pakistan is predominantly an agriculture country.
7. The faculty of Veterinary and Animal Sciences organized a seminar on “Rabies treatment and control” on April 09, 2009 at University seminar room In the seminar National Coordinator of Rabies Prevention & Control Programme at National Institute of Health, Islamabad, Dr. Shahab Akhtar Kazi delivered lecture on rabies prevalence, diagnosis and treatment in humans, while Research Officer at Veterinary Research Institute Lahore Dr. Zafar Qureshi on out break of rabies in mules and In-charge Flury Section at VRI Dr. Haifz Noman delivered lectures on diagnosis of rabies in animals respectively.
8. International Punjabi Conference on “Sufi Heritage of Punjab” was held at PMAS-AAUR on June 04, 2009. Directorate of Student Affairs, PMAS-AAUR in collaboration with Higher Education Commission (HEC), organized the conference. Speaking as a chief guest at the inaugural session of the conference Federal Minister for Religious Affairs, Syed Hamid Saeed Kazmi said Islamic teachings were practically preached by Sufi poets in the

subcontinent. At the concluding session, Pir Noor-ul-Haq Qadri, the Federal Minister for Zaqat and Ushar was the chief guest.

9. During the month of June three different resource person delivered lectures on “Experience on Indian Agriculture” by Prof. Dr. Muhammad Munir Dean, Faculty of Crop and Food Sciences, “Mentoring Research in Higher Education in Pakistan: An Empirical Study of Student’s Perception” by Ms. Almas Kinai, Assistant Professor, Division of Continuing Education and “Role of Biodiversity in Agriculture” Dr. Zahid Akram, Assistant Professor, Department of PBG.
10. Prof. Dr. Nadeem Akhtar Abbasi, Chairman Department of Horticulture attended a five days seminar on “Good Agricultural Practices (GAP) and Safety for Fruit Crops and Vegetables: Managing Food Quality” held at Yogyakarta in Indonesia from 29 June to 3 July, 2009. He presented a country paper on “Implementation of Good Agricultural Practices (GAP) in Horticulture Sector of Pakistan” for improvement of the produce quality and food safety.
11. A one day training workshop on “Participatory Epidemiology and its Application in Developing Countries” was organized by Faculty of Veterinary and Animal Science, in collaboration with participatory Epidemiology Network for Animal and Public Health (PENAPH) on July 09, 2009 at PMAS-AAUR.
12. Dr. Shamim Akhter, Assistant Professor, Department of Zoology has participated in annual conference of “Society for Reproduction and Fertility” held from 12-14 July 2009 at Oxford. Dr. Shamim Akhter presented her work on “Glutathione supplementation to improve the quality of cryopreserved buffalo (Babalus Bubalis) bull Semen”.
13. A 24 days Teachers training workshop form 27th July to 22nd August 2009 for Competency Enhancement of Teachers was held at PMAS-AAUR in collaboration with National Academy of Higher Education, Higher Education Commission (HEC). Ms. Noor Amna Malik, Director General, National Academy of Higher Education, HEC, while, addressing said that teaching cannot be defined merely to class room, and education is not a process in which only small groups of students participate.

14. University faculty members Prof. Dr. Saif Ullah Ajmal, Chairman, Department of PBG, Prof. Dr. S. M. Saqlan Naqvi, Chairman, Department of Biochemistry, Dr. Ghulam Jilani, Associate Prof., Dr. Tariq Siddeeq, Assistant Prof. and Dr. Riffat, Lecturer Department of Soil Science participated in International Conference on “Advance in Agriculture: Prospects and Potentials of Natural Resources in Food Security”. The conference was held at faculty of Agriculture University of Azad Jammu Kashmir Rawalkot on August 11-13, 2009.
15. International Conference on “Advance in Agriculture: Prospects and Potentials of Natural Resource in Food Security” was held at faculty of Agriculture University of Azad Jammu Kashmir Rawalkot on August 11-13, 2009. Faculty members of the University presented their research papers. Prof. Dr. Saif Ullah Ajmal and Prof. Dr. S. M. Saqlan Naqvi also chaired various technical sessions in the conference.
16. Prof. Dr. Sial Ullah Ajmal, Chairman, Department of Plant Breeding and Genetics attended three days training workshop, organized by Crop Disease Research Programme, NARC on August 14-16, 2009. Prof. Dr. Robert Park from University of Sydney, Australia, Dr. A. Mujeeb Kazi and Senior Scientists addressed the participants.
17. An International workshop on “Plant Conservation and Reversing Desertification: A way Forward” marked the Italian Ministry of Foreign Affairs. The workshop was held at PMAS-AAUR on October, 13-14, 2009, under the collaborative project of Department of Environmental Sciences & Institute of Agro-Environment and Forest Biology (IBAF), National Research Council (CNR), Italy. Workshop contained four technical sessions. Besides, an eminent scientist from Italy, Dr. Mauro Centritto who is the backbone of the project, and scientists from USA, UK and China also delivered their research papers regarding conservation, combating desertification and climate change which are the most serious issues of today.
18. A seminar on “Promotion of Rain Water Harvesting in EQAAs” delivered by Mr. S. Zaheer Hussain Gardezi, Director General, Water and Sanitation ERRA, on October 19, 2009 at University Seminar room.

19. A thirteen member's delegation led by Prof. Dr. Fayyaz ul Hassan Department of Agronomy participated in conference on "Sustainable Food Grain production: Challenges and opportunities" held at University of Agriculture Faisalabad. (UAF) from 26-27 October, 2009 organized by Pakistan Society of Agronomy.
20. Prof. Dr. Nemat Ullah, Dean Faculty of Veterinary and Animal Sciences (FV & AS), Associate Prof. Dr. Manzoor Hussain, Prof. Dr. Tanveer Ahmed, Assistant Prof. Dr. M. Farooq Iqbal and Dr. Kakhif Ishaq, Lecturer in FV & AS attended 6th Asian Buffalo Congress held at Lahore from October 27 to 30, 2009.
21. International Conference on Gender Participation in the development of Science from November 14-15, 2009 at Dhaka, Bangladesh. The Theme of the conference was Women Scientists for Development.

STUDENTS EXTRA CURRICULAR ACTIVITIES

S #	Particulars	Date
1.	Essay Competition	1 st January, 2009
2.	“Islam Zinda Hota ha har Karbla ke Baad”	
3.	(In connection with Ashura Moharram)	
4.	English Speech Competition (Education for All)	15 th January, 2009
5.	Poster Competition	28 th – 29 th Jan, 2009
6.	Celebration of Eid Melad-un-Nabbi &	12 th – 18 th Mar, 2009
7.	Naat & Speech Competition – “Seerat-e-Nabvi”	

S #	Particulars	Date
1.	Students’ Week 2009 - Software competition - Poster competition - Flower Arrangement Competition - Sports Competition - Essay Writing Competition - Art Exhibition - Drama Competition Inter University Competitions - Qiraat & Naat Competition - One man Show Competition - Master Mind Quiz (Quraan Majeed) - Bilingual Declamation - Urdu Mushaira	14 th – 18 th April, 2009
2.	6 th All Pakistan Bilingual Declamation Contest 2009	20 th - 21 st May, 2009
3.	Health Awareness Campaign	26 th May, 2009
4.	Punjabi Conference 2009	03 rd June, 2009
5.	Environment Day	6 th June, 2009
6.	Writing, painting, software and speech competitions	18 th June, 2009
7.	Students Counseling & Training sessions a. Participate in Art activities b. You may be a good Speaker c. Performance training d. Leadership development through co-curricular activities e. Best Use University facilities f. How to get good grades in exams	
8.	Creative Leader’s Conference 2009	05 th – 08 th July, 2009
9.	Orientation for new Enrolled students	08 th October, 2009
10.	Qiraat & Naat Competition	15 th October, 2009
11.	Leadership Development Workshop	29 th October, 2009
12.	Essay/ Story writing Competition	05 th November, 2009
13.	2 nd Creative Leaders’ Conference	13 th – 15 th Nov, 2009
14.	Art Exhibition	17 th December, 2009
15.	Video Making Competition	17 th December, 2009
16.	Lecture on Health Care – Stress Management	17 th December, 2009
17.	Bilingual Declamation	31 st December, 2009

SPORTS ACTIVITIES

The Directorate of Sports conducted trials for PMAS-AAUR teams and arranged coaching classes respectively. The university teams undertook the following sports events during the year 2008.

1. Participated in Table Tennis (Boys) Championship at LUMS, from December 13-16, 2007.
2. Participated in Badminton (Boys) Championship at NUST Rawalpindi from January 25-27, 2008.
3. Participated in Basket Ball (Boys) Championship at NUST Rawalpindi from February 25-28, 2008.
4. Participated in Athletics (Boys) competition at Punjab University Lahore from February 27-30, 2008.
5. Participated in Football (Boys) Championship at Islamic International University Islamabad from February 20-24, 2008.
6. Participated in Tug of War (Boys) Competition at Mehran University Sindh from March 18-22, 2008.
7. Participated in Hiking (Boys) competition at Azad Jammu Kashmir Muzaffarabad from April 15-17, 2008.
8. Participated in Volley Ball (Boys) at Islamic International University Islamabad from April 19-20, 2008.
9. Participated in Badminton (Girls) at Sargodha University Sargodha from January 28-30, 2008.
10. Participated in Hiking (Boys/Girls) Inter Department Competitions at Margalla Hills Islamabad on April 07, 2008
11. Inter Department Sports Competitions 2008 (Boys/Girls) during the Students Week at PMAS-AAUR was organized by the Directorate of Sports in April 2008.

UNIVERSITY PUBLICATIONS

PAKISTAN JOURNAL OF ARID AGRICULTURE

In order to infuse a culture of publications among the faculty and research students the charges for publication in the journal were revised. Any student who intends to publish will be charged at subsidized rate, while faculty members can publish one paper free of cost per journal as first author of the journal. The journal is circulated to about 80 different organizations in the country and 10 international organizations without price.

PMAS-AAUR-NEWS

In order to have a close contact with community and activities at university “PMAS-AAUR NEWS” is published on monthly basis. This is widely circulated among students, faculty and to all sister organizations.

NAVEED-E-BARAN

This magazine is an annual publication which carries creative contribution from students and is managed by an Editorial Board mainly comprised of students.

STUDENT DISSERTATIONS

Three Hundred and Twenty five (325) theses were delivered during 2009 by post-graduate students of the university out of which Twenty-Eight (28) theses were received on account of PhD degrees.

FACUTLY PUBLICATIONS

The University Faculty published **190** Research papers in 2009 in the National & International journals (List is placed at appendix-I).

FACULTY PUBLICATIONS 2009

1. A Hussain, **N.A. Abbasi**, I.A. Hafiz, Z. Ahmad. and S.M.S.Naqvi (2009). Molecular characterization and genetic relationship among loquat (*Eriobotrya japonica* Lindl.) genotypes of Pakistan assessed by RAPD markers. Pak J Bot.:41(5):2437-2444.
2. **Abbasi, N. A.**, Z. Iqbal, M. Maqbool and I. A. Hafiz. 2009. Postharvest quality of mango (*Mangifera indica* L.) fruit as affected by chitosan coating. Pak. J. Bot., 41(1): 343-357. (0.47)
3. Ali, A., T. Ahmad, N. A. Abbasi and **I. A. Hafiz**. 2009. Effect of different media and growth regulators on *in vitro* shoot proliferation of olive cultivar 'Moraiolo'. Pak. J. Bot., 41(2): 783-795. (0.47).
4. Ali, A., T. Ahmad, N. A. Abbasi and **I. A. Hafiz**. 2009. Effect of different concentrations of auxins on *in vitro* rooting of olive cultivar 'Moraiolo'. Pak. J. Bot., 41(3): 1223-1231. (IF 0.47)
5. Abdul Rehman, Talat Afza, **Abdul Qayyum**, and M. Ahmed Bodla (2009). "Estimating Toatal Factor Productivity and its Components: Evidence form Major Manufacturing Industries of Pakistan". Conference Proceedings of the 24th Annual General Meeting and Conference of the Pakistan Society of Development Economist, March 31, April 2, 2009.
6. **Abbasi, N.A.**, A. Hussain, M. Maqbool, I. A. Hafiz and A. A. Qureshi. 2009. Encapsulated calcium carbide enhances production and postharvest performance of potato (*Solanum tuberosum*) tubers. New Zealand Journal of Crop and Horticultural Science, 37:131-139. (IF 0.303).
7. Ahmed Husain, **S.N. Mirza**, I.A. Khan and M.A. Naeem.2009. Determination of relative species composition and seasonal plant communities in Nurpur reserved forests in scrub rangelands of district Chakwal. Pak.J.Agric. Sci., 46(1): 34-39.
8. Ahmad, T., Sohail K., Rizwan M., Mukhtar M., Bilal R. and **Khanum A.** Prevalence of *Helicobacter Pylori* pathogenicity-associated *cagA* and *vacA* genotypes among Pakistani dyspeptic patients. FEMS Immunol. Med. Microbiol., 55(1):34-38, 2009. Impact factor 1.928.

9. Ahmad R. and **Rahman, A.** 2009. Sorption characteristics of atrazine and imazethapyr in soils of New Zealand: importance of independently determined sorption data. *Journal of Agricultural and Food Chemistry* 57(22), 10866-10875.
10. Arif and **Malik.** (2009) Economic Feasibility of Proposed Cropping Patterns under Different Soil Moisture Regimes of Pothwar Plateau. *Int. J. Agric. Biol.* 11(1): 27-32.
11. Acheampong EA, Roschel C, **Mukhtar.M**, Srinivasan A, Rafi M, Pomerantz RJ, Parveen Z. (2009) Combined effects of hyperglycemic conditions and HIV-1 Nef: a potential model for induced HIV neuropathogenesis. *Virology J.*, 6:183.
12. Arshad M, Hussain I, Ashraf MY, Noureene S, and **Mukhtar M.** (2009) Study on agromorphological variation in germplasm of *Lasiurus scindicus* from Cholistan Desert, Pakistan. *Pak. J. Bot.*, 41:1331-1337
13. Ahmad T, Sohail K, Rizwan **M**, **Mukhtar M**, Bilal R, and Khanum A. (2009) Prevalence of *Helicobacter pylori* pathogenicity-associated *cagA* and *vacA* genotypes among Pakistani dyspeptic patients. *FEMS Immunol. Med. Microbiol.*, 55(1):34-8
14. A.A.Khan, **G. Jilani**, M. S..Akhtar, S.M.S. Naqvi, M. Rasheed (2009). Phosphorus Solubilizing Bacteria: Occurrence, Mechanisms and their role in crop production. *J. Agric. Biol. Sci.*, 1(1):48-58.
15. Aamir Saleem, *Fayyaz-ul-Hassan*, Abdul Manaf & **M.S. Ahmedani** "Germination of *Themeda triandra*(Kangaro grass) as affected by different environmental conditions and storage period. *Afr. J. Biotech.* 8(17):4094-4099, 2009.
16. **Aamir Saleem**, *Fayyaz-ul-Hassan*, *Abdul Manaf* & M.S. Ahmedani "Germination of *Themeda triandra*(Kangaro grass) as affected by different environmental conditions and storage period. *Afr. J. Biotech.* 8(17):4094-4099, 2009.
17. **Ansar, M.** and Leitch, M. H. 2009. The effect of agronomic practices on the development of *Septoria Leaf Blotch* and its subsequent affect on the yield and yield components of wheat. *American-Eurasian Journal of Sustainable Agriculture*, 3(1):57-67, 2009.

18. **Ahmed, M.**, M.A. Khan, U. Rasheed, M. Zafer, M. Arshad and S. Sultana. 2009. Quality assurance of herbal drugs valerian by chemotaxonomic markers. *Afric. J. Biotech.* 8(6):1148-1154(Impact factor = 0.567)
19. Ali, S., **S.U.Ajmal** and S.F.Bukhari. Chick pea somatic embryogenesis: Effect of hormone and culture manipulations. Prospects and Potentials of Natural Resources in Food Security. International Conference on Advances in Agriculture. 11-12 August, 2009:Univ.A.J.K. pp84
20. **Ahmedani, M.S.** M. Aslam M.I. Haque, Syed Nadeem Afzal and Ands Naz. 2009. Varietal changes in nutritional composition of wheat kernel (*Triticum aestivum* L.) caused by khapra beetle infestation. *Pakistan Journal of Botany.*, 41(3): 1511-1519. Impact Factor = 0.29
21. **Ahmedani, M.S.**, M. Aslam, S. Naz, M. Y. Ahmedani. 2009. Maneuvering Humidity to augment response of phosphine against adult and egg stages of *Liposcelis bostry drophila* badonnel (Psocoptera: Liposcelidae). *African Journal of Biotechnology.* (May 15, 2009). Impact Factor = 0.456
22. Ahmed Z., M.A. Rafi, Z. Hussain and **M. Naeem.** (2009). Occurrence of Odonata in Northern areas of Pakistan with seven new records. *Halteres. India.* 1(1): 48-56.
23. **Ahmedani, M.S.** M. Aslam, Sayyed Ali Hussnain and Naz Shagufta. 2009. Psocid: A new risk for global Food Security and Safety. AEZ No.AY 9003 (14-01-2009). *Journal of Applied Entomology and Zoology. Japan.* Impact Factor = 0.77.
24. Akram,Z., **S.U.Ajmal**, G. Shabbir and N.M.Cheema. Inheritance mechanism of some yield components in bread wheat. *Pak.J.Agric.Res. (Accepted)* Vol.22. 2009.
25. **Akram,Z.**, S.U.Ajmal, K.S. Khan, R.Qureshi and M.Zubair. Combining ability estimates of some yield and quality related traits in spring wheat (*Triticum aestivum*). *Pak. J. Bot. (accepted)*.
26. *Animal Physiology and Animal Nutrition.* 93:253-262 (1.171). DOI. 10.1111/j.1439-0396.2008.00813.x

27. Ahmad, K.M.A. Khan, M. Ahmed, M. Zafar, **M. Arshad** and F. Ahmad. 2009. Taxonomic diversity of stomata in dicot flora of a district tank (N.W.F.P.) in Pakistan. *Afric. J. Biotech.* 8(6):1052-1055(Impact factor = 0. 567).
28. **Akram,Z.**, S.U.Ajmal, G. Shabbir and N.M.Cheema. Inheritance mechanism of some yield components in bread wheat. *Pak.J.Agric.Res.* (Accepted) Vol.22.2009.
29. **Akram,Z.**, S.U.Ajmal, K.S. Khan, R.Qureshi and M.Zubair. Combining ability estimates of some yield and quality related traits in spring wheat (*Triticum aestivum*). *Pak. J. Bot.* (Accepted).
30. **Ajmal, S.U.**, N.Zakir and M.Y.Mujahad. Estimation of genetic parameters and characters association in wheat. *JABS* 1(1):15-18
31. Ali.R., S.M . Iqbal., U. Iqbal ,A. Ghafoor and A. Akram. 2009. Pathogenic diversity in *Ascochyta rabiei* (PASS of chickpea. *Pak. J. Bot.* 0.47 41(2) 2009 4`13-419
32. Ali A., M. Tahir, M. Ayub, I. Ali, A. Wasaya and F. Khalid. (2009). Studies on the Effect of Plant Spacing on the Yield of Recently Approved Varieties of Cotton. *Pak. j. life soc. sci.*, 7(1):25-30
33. Abro, S.A., R. Qureshi, G.S. Jakhar and F.M. Soomro. 2009. Effects of silicon levels on growth and yield of wheat in silty loam soil. *Pakistan Journal of Botany* 41(3): 1385-1390 (Impact factor = 0.47).
34. Ateeq-ur-Rehman, Abdul Mannan, Samiainayatullah, M. Zaeem Akhtar, **Mazhar Qayyum** and Bushra Mirza. 2009. Biological evaluation of wild thyme (*Thymus serpyllum*). *Pharmaceutical Biology*, 47(7): 628-633.
35. **Akhter, S.**, M. S. Ansari, B. A. Rakha, N. Ullah, S. M. H. Andrabi, M. Khalid. 2009. Comparison of Bioxcell® with tris-egg yolk, skim milk and egg yolk-citrate extender for liquid storage of buffalo (*Bubalus bubalis*) semen. *Reproduction in Domestic Animals* (accepted; Impact factor; 1.526)
36. Abubakar, M; G. Ferrari; **M. Hussain**; E. Haq; M.J.Arshad and Q. Ali 2009 Prevalence of Foot and Mouth Disease Virus Serotypes in Pakistan. *J. Zool Pakistan J Zool. Suppl. Ser No.* 9(1):351-355

37. Abubakar, M; S. M. Jamal; M. J. Arshad; **M. Hussain** and Q. Ali. 2009. Peste des petits ruminants virus (PPRV) infection; Its association with species, seasonal variations and geography. Trop. Anim. Hlth. Prod. Published online: 07 January 09
38. **Ahmad, T.**, T. Mushtaq, M. A. Khan, M. E. Babar, M. Yousaf, Zia-ul-Hassan and Z. Kamran. 2009. Influence of varying dietary electrolyte balance on broiler performance under tropical summer conditions. Journal of Animal Physiology and Animal Nutrition. 93:613-621. DOI: 10.1111/j.1439-0396.2008.00840.x .
39. Ahmed, N., Shahid, F. and **Ullah, N.**, 2009. Use of reproductive biotechnologies to preserve Pakistan Urial. Proceedings of 29th Pakistan Congress of Zoology held at the University of Sindh, Jamshoro, from February 24 to February 26, 2009. pp. 30. (Abstract).
40. **Akhtar, S.**, Ansari, M.S., Rakha, B.A., Andrabi, S.M.H., Anwar, M. and Ullah, N. 2009.Effect of fructose addition in skim milk extender on the quality of liquid Nili-Ravi buffalo (*Bubalus bubalis*) semen. Pak. J. Zool. (Accepted; manuscript No. PJZ-92-09)
41. **Akhter, S.**, Ansari, M.S., Rakha, B.A., Ullah, N., Andrabi, S.M.H. and Khalid, M. 2009.Comparison of Bioxcell with tris-egg yolk, skim milk and egg yolk-citrate extender for liquid storage of buffalo (*Bubalus bubalis*) semen. Reprod. Dom. Anim. (in press;Mnuscript No. RDA-OA-may-2009-0144)
42. Ansari, M.S., Rakha, B.A., Ullah, N., Andrabi, M.S.H. and **Shamim Akhter**. 2009.Glutathione addition in Tris-egg Yolk Extender improves the quality of cooled buffalo (*Bubalus bubalis*) bull semen. Pak. J. Zool. (Accepted)
43. Ansari, M.S., Rakha, B.A., Ullah, N., Andrabi, S.M.H., Khalid, M. and **Akhtar, S.** 2009. Effect of L-Cysteine in Tris-citric Egg yolk extender on post thaw quality of Nili-Ravi Buffalo (*Bubalus bubalis*) bull spermatozoa. (Accepted; manuscript No. PJZ-98-09)
44. Aheer, G. M., **M.A. Aziz**, A. Hameed and A. Ali (2009). Monitoring of insecticide resistance in *Helicoverpa armigera* Hub to different insecticides. J. Entomol.Res. 39(3): 159-167.

45. **Aslam, M.** 2009. Low cost grain storage technology. Zirrat Nama 48(12):15-16 Directorate of Agri Information Agriculture Department, Government of The Punjab, Lahore.
46. **Akhter, S.,** M. S. Ansari, B. A. Rakha, S. M. H. Andrabi M. Anwar and N. Ullah. 2009. Effect of fructose addition in skim milk extender on the quality of liquid Nili-Ravi buffalo (*Bubalus bubalis*) semen. Pakistan Journal of Zoology, (In press; Impact factor: 0.189)
47. **Ahmedani, M. S.,** M. Aslam, M. I. Haque, Syed Nadeem Afzal and S. Naz. 2009. Varietal changes in nutritional composition of wheat kernel (*Triticum aestivum* L.) caused by Khapra Beetle infestation. Pak. J. Bot. 41(4): August 2009.(accepted)
48. Afzal, S. N., M.I. Haque, **M.S. Ahmedani,** Munir Ahmad, Syeda Siddiqa Firdous, Abdul Rauf, I. Ahmad and A. R. Rattu. 2009. Resistance potential of wheat germplasm (*Triticum aestivum* L.) against stripe rust under rain-fed climate of Pakistan. Pak. J. Bot. 41(4): August 2009. (accepted)
49. Atta, S.M., M.M.Hashim, A.Zia and **T. Masud.** 2009. Influence of Different Amounts of Starter Cultures on the Quality of Yoghurt Prepared from Buffalo Milk. Pakistan Journal of Zoology. 9; 129-134.
50. Afzal, S. N. M. I. Haque, **M.S. Ahemdani,** M. Munir, S. S. Firdous, C. A. Rauf, I. Ahmad, A.R. Ratty and M. Fayyaz. 2009. Resistance potential of wheat germplasm (*Triticum aestivum* L.) against stripe rust under rain-fed climate of Pakistan. Pak J. Bot., 41 (3): 1463-1475.
51. A. N. Chaudhry, **G. Jilani,** M. A. Khan and T. Iqbal. 2009. Improved processing of poultry litter reduces nitrate leaching and enhances its fertilizer quality. Asian J. chem. Vol 21(7), 4997-5003.
52. **Asif A,** Anjum FM, Din A, and Nawaz H. 2009. Physicochemical and functional properties of barley β -glucan as affected by different extraction procedures. Int. J. Food Sci. and Tech., 44: 181-87.
53. **Asif A,** Anjum FM, Zahoor T, and Nawaz H. 2009. Extraction of β - glucan from oat and its interaction with lipoprotein profile. Pak. J. Nutrition 8 (9): 1486-1492

54. Bilal, A., **T. Masud**, A.M. Uppal and A. K. Naveed. 2009. Effect of *Nigella Sativa* oil on some blood parameters in type 2 Diabetes Mellitus patients, Asian Journal of Chemistry. 21(7) 5373-5381.
55. Bilal, A., **T. Masud**, A.M. Uppal and A. K. Naveed. 2009. Effect of *Nigella Sativa* seed powder on some important blood parameters in type 2 Diabetes Mellitus patients, Asian Journal of Chemistry. Accepted 30 May, 2009.
56. Chaudhry, A.N., **G. Jilani**, M.A. Khan, T. Iqbal. 2009. Improved processing of poultry litter to reduce nitrate leaching and enhance its fertilizer quality. Asian Journal of Chemistry. 21 (7) : 4997-5003.(Impact factor 0.292)
57. Chaudhry, M. T. and **M. Aslam**. New record of genus *Macromia* (Rambur) Odonata: Anisoptera from Azad Jammu and Kashmir. Asia Life Science, the Asian International Journal of Life Sciences. (26-07-2009). Impact factor journal, impact factor =.12
58. Chaudhry, M. T. and **M. Aslam**. *Anax indicus* (Odonata: Anisoptera: Aeshnidae), an addition in the fauna of Pakistan. Pakistan Journal of Zoology 107-109. Impact factor=0.105 (24-08-2009).
59. Chaudhry, M. T. **M. Aslam**, and M. Naeem. New record of genus *Gynacanthaeshna* Fraser, 1992 (Odonata: Anisoptera: Aeshnidae) from Pakistan. Pakistan Journal of Zoology. (31-10-2009).
60. Chaudhry, A.N., **G. Jilani**, M.A. Khan and T. Iqbal. 2009. Improved processing of poultry litter to reduce nitrate leaching and enhance its fertilizer quality. Asian Journal of Chemistry. 21(7): 4997-5003. (Impact factor 0.268)
61. **Farhana Riaz Chaudhry**, Mazhar Qayyum, M. Fatah Ullah Khan, Tanveer Ahmad, Azra Khanum, M. Riaz Shakir, Dilshad Hussain and James E. Miller. 2009. Peri-Parturient rise in faecal nematode egg counts with reference to *Haemonchus contortus* in Bulkhi ewes in northern Punjab, Pakistan. Pakistan J. Zool., 41 (6): 437-443.
62. Firdous, S. S., R. Asghar, **M. I. Haque**, S. N. Afzal and M. Y. Mirza Pathogenesis of *Pseudomonas syringae* pv *Sesami* associated with sesame bacterial leaf spot. Pakistan Journal of Botany. 0.470 41 2009 927-934

63. Farzana S and **M. Gulfraz**. 2009. Quality Assessment of Fresh Milk obtained From different Sources. Pak. J. Zool. 41(4)316-319.
64. Firdous, S. S., R. Asghar, M.I.Haque, **A.Waheed**, S. N. Afzal and M.Y. Mirza. 2009. Pathogenesis of *Pseudomonas syringae* Pv. *sesami* Associated with Sesame (*Sesamum indicum* L.) Bacterial Leaf Spot. Pakistan Journal of Botany, 41(2): 927-934.
65. Firdous, S.S., Asghar, R., **Waheed**, A., Ul-Haq, M.I., Afzal, S.N. and Mirza, M.Y. 2009. Pathogenesis of *Pseudomonas syringae* pv. *sesami* associated with sesame bacterial leaf spot. Pak. J. Bot., 41(2), 927-934. **(Impact Factor 0.47)**.
66. Farida I. M. Arshad, F. Rasheed, D. Amraiz, P. Anwar and **M. Gulfraz** 2009. Treatment of Various wound Models in Rats with Acacia Honey. Phytotherapy Res DOI: 10.1002/pr.2990.
67. **Farhana Riaz Chaudhry**, M. Qayyum M. F. U. Khan, T. Ahmad, A. Khanum, M. R. Shakir, D. Hussain and J. E. Miller. 2009. Peri-Parturient Rise in Faecal Nematode Egg Counts with Reference to *Haemonchus contortus* in Bulkhi Ewes in Northern Punjab, Pakistan. Pakistan J. Zool. 41: 437-443.
68. Ghulam Rabbani, **Muhammad Munir**, Saif Ullah Ajmal, Fayyaz-ul-Hassan, Ghulam Shabbir and Abid Mehmood "Inheritance of yield attributes in bread wheat under irrigated and rainfed conditions. Sarhad J. Agric. 25(3)429-439, 2009.
69. Glutathione addition in *tris*-egg yolk extender improves the quality of cooled buffalo (*Bubalus bubalis*) bull semen. Pakistan Journal of Zoology, (In press; Impact factor: 0.189)
70. Ghufraan, M. A., Qureshi, **R. A.**, **Batool**, A., Guilford, J., Marlar, L. E., Kondratyuk, T. P., Chang, L. C. and Pezzuto J. M. 2009. Evaluation of Selected Indigenous Medicinal Plants from the Western Himalayas for Cytotoxicity and as Potential Cancer Chemopreventive Agents. *Pharmaceutical Biology*. 47(6) 533-538.
71. **Gulfraz M**, G. Arshad, S. Mehmood, N. Minhas, N. Jabeen, S Naz, S, Saukhat and F.Siddique.2009. Isolation and Characterization of edible oil from wild olive. Afr. J. Biotechnology. 8(12) 3734-3738.

72. Gulfraz M., R. Kauser, **G. Irshad**, S. Mehmood, N. Minas. 2009. Isolation and Characterization of edible oil from wild olive. African Journal of Biotechnology 8(16): 3734-3738.
73. Ghalib, S.A., **Rais, M.**, Abbass, D., Tabassum, F., Begum, A. and Jabeen, T. 2009. An overview of the status of the shorebirds and internationally important sites of Pakistan. Pakistan Journal of Zoology. 41(3) 165-172.
74. Hussain, S., T. Siddique, **M. Saleem**, M. Arshad and A. Khalid. 2009. Impact of pesticides on soil microbial diversity, enzymes and biochemical reactions. Advances in Agronomy 102: 159-200.
75. Hussain S., M. Arshad, B. Shaharoon, **M. Saleem** and A. Khalid. 2009. Concentration dependent growth/non-growth linked kinetics of endosulfan biodegradation by *Pseudomonas aeruginosa*. World Journal of Microbiology and Biotechnology 25: 853-858.
76. **Hussain, M;** G. Ferrari; E. Haq; M. Abubakar; M.J.Arshad; A. R. Malik and Q. Ali 2009 Serological Evidence of Foot and Mouth Disease Virus Infection in Punjab Province - A Cross Sectional Study. Pakistan J Zool. Suppl. Ser No. 9:xx.xx. In press
77. Hussain, A., N. A. Abbasi, I.A. Hafiz, Z. Ahmad and **S.M.S. Naqvi**. 2009. Molecular characterization and genetic relationship among loquat (*Eriobotrya japonica* Lindl.) genotypes of Pakistan assessed by RAPD markers. Pak. J. Bot., 41(5): 2437-2444.
78. Hussain, A., N. A. Abbasi, **I. A. Hafiz** and A. Akhtar. 2009. Morpho-physical characteristics of eight loquat genotypes cultivated in Chakwal district, Pakistan. Pak. J. Bot., 41(6): MS# 09-308 In press
79. Haq, I., T. Ahmad, **I. A. Hafiz** and N. A. Abbasi. 2009. Influence of micro cutting sizes and IBA concentrations on *in vitro* rooting of olive cv. 'Dolce Agogia.' Pak. J. Bot., 41(3): 1213-1222. (IF 0.47)
80. Hussain, A., **Sarwat N.Mirza**, Irshad A.Khan and M.A.Naeem 2009. Determination of relative species composition and seasonal plant communities of Nurpur reserved forest in scrub rangelands of distt. Chakwal. Pak.J.Agr. Sci. Vol. 46(1).

81. Haq, U.W., **M.Munir** and Z.Akram. Estimation of interrelationship among yield and yield related attributes in wheat lines. Pak.J.Bot. (Accepted).
82. Haq, U.W., **M. Munir** and Z. Akram. Estimation of interrelationship among yield and yield related attributes in wheat lines. Pak.J.Bot. (accepted).
83. Haq,M.I., **S.U.Ajmal** and M.Tariq. Genetic analysis for grain yield and quality attributes in maize. Prospects and Potentials of Natural Resources in Food Security. International Conference on Advances in Agriculture. 11-12 August, 2009:Univ.A.J.K.
84. Iftikhar, F., **M. Arshad**, F. Rashid, D. Amraiz, P. Anwarand M. Gulfraz 2009Effects of Acacia Honey on Wound Healing in Various Rat Models *Phytother. Res.* (Impact factor=1.51)
85. Iqbal, Z., Arshad, M., Ashraf, M., **Waheed, A.** and Naeem, R. 2009. Genetic divergence and correlation studies of soybean [*Glycine max* (L.) Merrill] genotypes. Pak. J. Bot., Accepted. (**Impact Factor 0.47**).
86. Iqbal, M.F., Hashim, M.M., **Ullah, N.**, Zhu, Wei-Yun and Cheng, Yan-Fen. 2009. Molecular identification of methanogenic archea and current approaches to alter the ruminal microbial ecosystem for methane mitigation. Pak. J. Zool. Suppl. Ser. No. 9, pp 551-557.
87. **Inam-ul-Haq**, M.N. Javed, M. Ahsan Khan, M.J. Jaskani, M.M. Khan, H.U.Khan,
88. **G.Irshad** and S.R. Goher. 2009 Role of temperature, moisture and trichoderma species ciceri in the rainfed areas of Pakistan. Pakistan Journal of Botany. 41(4): 1965-1974
89. Ishaq, K., **N. Ullah**, T. Ahmad and M. Yaqoob. 2009. Incidence of Reproductive Disorders in Cattle and Buffalo around Islamabad and Rawalpindi. Pakistan J. Zool. Suppl. Ser No. 9:69-71.
90. Ishaq, S., H. A. Rathore, T. Masud and **S. Ali**. 2009. Influence of Post Harvest Calcium Chloride Application, Ethylene Absorbent and Modified Atmosphere on Quality Characteristics and Shelf Life of Apricot (*Prunus armeniaca* L.) Fruit During Storage Pak. J. Nutrition 8 (6): 861-865,

91. Ibrar H. Akhtar, **M. Naeem**, H. Javed and M. A. Aziz. (2009) Could Host Plant Resistance affect on Cereal Aphids (Aphididae; Homoptera) population on Wheat crop? International Journal for Agro Veterinary and Medical Sciences (IJAVMS), (accepted).
92. Jahan, S., S. Rasool, M. A. .Khan, **M. Ahmad**, M. Zafar , M. Arshad and A. M. Abassi 2009 Antifertility effects of ethanolic seed extract of *Abrus precatorius* L. On sperm production and DNA integrity in adult male mice. *J. Med. Pl. Res.*3(10): 808-814 (Impact factor 0.40)
93. Kausar M., T. Mahmood, S. M. A. Basra and **M. Arshad** 2009 Invigoration of Low Vigor sunflower Hybrid by seed priming. *Int. J. Agric. Biol.*11(5):521-528
94. Kaleem,S., **M. Ansar**, M.A. Ali,A. Sher,G. Muhammad and M. Rasheed (2009) Effect of Phosphorus on the yield and yield components of wheat variety-Inqulab-91 ,under rainfed conditions. *Sarhad J. Agric.* 25(1): 19-24
95. K. Sultana, A. Sadiq, **Gulshan Irshad**. 2009. Hymenomycetes from Rawalpindi. *Pakistan Journal of Botany* (submitted)
96. Khan, A. A., I. Hussain and S. Munir. 2009. Control of rodent damage to groundnuts in the Pothwar Plateau region of Pakistan. *Pakistan Journal of Zoology*, 41(3):203-207.
97. Khalid, A., **M. Arshad** and D.E. Crowley. 2009. Perspectives for improving azo dye biotreatment systems using bioaugmentation. In: H.A. Erkurt (ed). *The Handbook of Environmental Chemistry*. Springer, The Netherlands (In press).
98. Khalid, A., **M. Arshad**, B. Shaharoon and T. Mahmood. 2009. Plant growth promoting rhizobacteria (PGPR) and sustainable agriculture. p. 133-160. In: M.S. Khan, A. Zaidi and J. Musarrat (eds.). *Microbial Strategies for Crop Improvement*. Springer-Verlag, Berlin Heidelberg, Germany.
99. Khalid, A., **M. Arshad** and D.E. Crowley. 2009. Biodegradation potential of pure and mixed bacterial cultures for removal of 4-nitroaniline from textile dye wastewater. *Water Research* 43: 1110-1116.

100. Khan, A.A., G. Jilani, M.S. Akhtar, S.M.S. Naqvi and M. Rasheed. 2009. Phosphorus solubilizing bacteria: Occurrence, mechanisms and their role in crop production. *Journal of Agriculture & Biological Sciences*. 1(1): 48-58.
101. Khan, K. S., and R. G. Joergensen. 2009. Changes in microbial biomass and P fractions in biogenic household waste compost amended with inorganic P fertilizers. *Bioresource Technology*, 100: 303-309 (IF 2008: 4.453)
102. Khan, K. S., and R. G. Joergensen. 2009. Simultaneous measurement of S, macronutrients and heavy metals in the soil microbial biomass with CHCl_3 fumigation and NH_4NO_3 extraction. *Soil Biology and Biochemistry* 41:309-314 (IF 2008: 2.926)
103. Khalid, R., K. S. Khan, and M. Gulfraz. 2009. Relationship of plant available sulphur with soil characteristics, rainfall and yield levels of oilseed crops in Pothwar, Pakistan. *Pakistan Journal of Botany* (Accepted & in press) (IF 2008: 0.470)
104. Khan, K. S., T. Mueller, J. Dyckmans, and R. G. Joergensen. 2009. Development of ergosterol, microbial biomass C, N, and P after steaming as a result of sucrose addition and *Sinapis alba* cultivation. *Biol. Fertil. Soils* (Accepted & in press). (IF 2008: 1.446)
105. Khalid, R., K. S. Khan, M. Yousaf, G. Shabbir and A. Subhani. 2009. Effect of sulfur fertilization on rapeseed and plant available sulfur in soils of Pothwar, Pakistan. *Sarhad J. Agric.* 25: 65-71.
106. Khalid, A., R. Waqas and M. Arshad. 2009. Formulation of Novel Biofertilizer for stress Agriculture". *Proceedings of International Thematic Workshop on "Bioinoculant/ Biopesticides Production, Formulation and Application"* COMSTECH Secretariat, Islamabad, Pakistan. October 20-22, 2009. (In press).
107. Khan, Khalid Mahmood and Muhammad Aslam. 2009. Editors, *Proceedings of Training Workshop on "Controlled and Modified Atmospheres to Preserve Post Harvest Quality of Stored Grains"*. Published in 2009. Pages-188. ISBN: 978-969-8374-14-3.
108. Khalid, A. and Shahid Mahmood. 2009. Risks Related to Leather Industry. *The Nation: Money plus*, Lahore, November 16, 2009.

109. Khalid, A. 2009. Water Crisis in Pakistan: may deepen. The Nation, Lahore,
110. Khalid, R., K.S.Khan, M.Yousaf G. Shabbir and A. Subhani. 2009. Effect of sulfur fertilization on rapeseed and plant available sulfur in soils of Pothwar, Pakistan. *Sarhad J. Agric.*, 25(1): 65-71.
111. Khalid, R., K.S.Khan, G. Shabbir, M.Yousaf and S.Y. Naz. 2009. Status of plant available sulfur and its relationship to other soil characteristics in Pothwar soils. *Pak. J. Sci. & Ind. Res.*, 52(2): 84-90.
112. Khan, A.G. and Rashid, A. (2009) Vetiver grass – a miracle plant highly compatible with climate change. Proceeding of International Symposium on *Compatible with Climate Change* (ISCC), editors G. R. Bhatti and S. A. Soomro. March 27 – 29, 2009. Shah Latif University, Khairpur, Pakistan.
113. Ling XU., U. Najeeb, W.Q. Shen, G. Jilani, M. Rasheed and W.J. Zhou (2009) Establishment of *Agrobacterium*-mediated BT gene transformation system in mat rush (*juncus effusus* l.) *Pak. J. Bot.*, 41(5): 2615-2624, *Institute of Crop Science, Zhejiang University, Hang Zhou 310029, China.*
114. Latif, A. and T. Masud. 2009. *Moringa oleifera* A Promising Adjunct for Good Health and Nutrition. Food Reviews International. (07-034). Accepted 3 June. 2009.
115. Muhammad Arif and M. Azim Malik. (2009) Enhancing Crop Water Use Efficiency With Different Spatial Cropping Sequences And Subsequently Harvested Monetary Benefit Per Unit Rainfall Under Rainfed Conditions. *Int. J. Agric. Biol.* 11(4): 381-388.
116. M. Naseem, M. Aslam, M. Ansar and M. Azhar (2009). Allelopathic Effects of Sunflower Water Extract on Weed Control and Wheat Productivity. *Pak. J. Weed Sci. Res.* 15(1): 107-116
117. Mahmood, T., T. Masud, S.A. Abbass and S. Maqsood (2009) Isolation and identification of wild strains of lactic acid bacteria for yoghurt preparation from indigenous dahi, *Pak. J. Nutrition* 8(6) 866-871
118. Mahmood, T. T. Hameed, N. R. Siddiqui, A. Mumtaz, N. Safdar, and T. Masud. 2009. Effect of environmental changes on phytic acid

- content of wheat (*Triticum aestivum*), Pak. J. Nutrition 8 (1): xx-xx, 2009 (accepted)
119. Mushtaq Ahmad, Rahmatullah Qureshi, Muhammad Arshad, Mir Ajab Khan and Muhammad Zafar. Traditional herbal remedies used for the treatment of diabetes from district Attock (Pakistan). *Pakistan Journal of Botany*. 41(6): (Impact factor = 0.47).
 120. Munir Ahmad, Mushtaq A. Saleem and Ali H. Sayyed (2009) Efficacy of insecticide mixtures against pyrethroids and organophosphates resistant populations of *Spodoptera litura* (Lepidoptera: Noctuidae). *Pest Management Science* 65: 266-274.
 121. Mahmood, S. and A. Khalid. 2009. Environmental Concerns of Azo Dyes in Textile Wastewater. *The Nation*, Lahore, June 29, 2009.
 122. Manzoor, N., M. Yaseen, S.A.R. Mehdi and A. Khalid. 2009. Growth and yield response of tomato (*Lycopersicon esculentum* Mill.) to soil applied calcium carbide and L-methionine. *Pakistan Journal of Botany* 41(5): 2455-2464.
 123. Muhammad Ishtiaq, Mushtaq A. Saleem and Munir Ahmad (2009) Baseline susceptibility data for four insecticides against beet armyworm, *Spodoptera exigua* (Hubner) (Lepidoptera: Noctuidae). 29th Pakistan Congress of Zoology. February 24-26, 2009, University of Sindh, Jamshoro, Pakistan.
 124. Mahmood, Q., Z. Ping, Y. Hayat, R.S. Jin, M.R. Azim, G. Jilani, E. Islam and M. Ahmad. 2009. Effect of nitrite to sulfide ratios on the performance of anoxic sulfide oxidizing reactor. *Arab Journal of Science & Engineering* 34(1A): 45-54. (Impact factor 0.108)
 125. Meng, H., S. Hua, I.H. Shamsi, G. Jilani, Y. Li and L. Jiang. 2009. Cadmium-induced stress on the seed germination and seedling growth of *Brassica napus* L., and its alleviation through exogenous plant growth regulators. *Plant Growth Regulation* 58(1):47–59. (Impact factor 1.333)
 126. Mahmood, Q., H. Baolan, C. Jing, P. Zheng, M.R. Azim, G. Jilani and E. Islam. 2009. Isolation of *Ochrobactrum* sp.QZ2 from sulfide, nitrite treatment system. *Journal of Hazardous Materials* 165(1-3): 558-565. (Impact factor 2.975)

127. Mahmood T., Rehman M. S., Batool A., Cheema I. U. and Bangash N. 2009. Biosynthesis of Enzyme Ionic Plasma for Wastewater Treatment using Fruit and Vegetable Waste. *International Journal of Agriculture & Biology*. (submitted) ISSN Online: 1814–9596.
128. Mukhtiar Hussain, Muhammad Hanif, Saqib Ali, Saira Shahzadi, Muhammad Sheeraz Ahmad, Bushra Mirza and Helen S. Evans: Synthesis and coordination chemistry of Organotin(IV) complexes of 2,3-methylenedioxyphenylpropenoic acid. *J. Coordi. Chem.*, 2009, 62(13), 2229-2238.
129. Mukhtiar Hussain, Muhammad Sheeraz Ahmad, Adnan Siddique, Muhammad Hanif, Saqib Ali, Bushra Mirza: Dimethyltin(IV) Derivatives of Biologically Potent Substituted Phenylacrylic Acids; Synthesis, Chemical Characterization and Inhibitory Effects on *Agrobacterium tumefaciens*. *Chem. Bio. & Drug Design*, 2009, 74, 183-189.
130. Muhammad Hanif, Mukhtiar Hussain, Saqib Ali, Moazzam H. Bhatti, Muhammad Sheeraz Ahmad, Bushra Mirza and Helen S. Evans: *In Vitro* Biological studies and structural elucidation of Organotin(IV) derivatives of 6-nitropiperonylic acid: Crystal Structure of $\{[(CH_2O_2C_6H_2(o-NO_2)COO)SnBu_2]2O\}_2$. *Polyhedron* (2009), DOI:10.1186/1743 422X 6183.
131. M. S. Ansari, B. A. Rakha, N. Ullah, S. M. H. Andrabi, M. Khalid, S. AKHTER. 2009. Effect of L-cysteine in *tris*-citric egg yolk extender on post thaw quality of Nili-Ravi buffalo (*Bubals bubalis*) bull spermatozoa. *Pakistan Journal of Zoology*, (In press; Impact factor: 0.189)
132. Mahmood, Q., Z. Ping, H. Baolan, G. Jilani, M.R. Azim, W. Donlei and L. Dan. 2009. Isolation and characterization of *Pseudomonas stutzeri* QZ1 from an anoxic sulfide oxidizing bioreactor. *Anaerobe* 15(4): 108-115. (Impact factor 1.561)
133. Mahmood, Q., Y. Hayat, G. Jilani, Z. Hussain and M.R. Azim. 2009. Back propagation neural networks to predict the performance of anoxic sulfide oxidizing reactor. *Kuwait Journal of Science & Engineering*. 36(2A): 1-14. In press. (Impact factor 0.051)

134. M. S. Ansari, B. A. Rakha, N. Ullah, S. M. H. Andrabi and S. AKHTER. 2009
135. Mahmood-ul-Hassan, M. and M. A. BEG. 2009. The Barn Owls of Pakistan: Habitat, Food and Breeding Habits. Publisher Verlag Dr. Muller, Germany.
136. MIAN, A. 2009. Indian Crested Porcupine (*Hystrix indica*): Biology and Management. VDM Verlag- pp 132.
137. Mushtaq, M; Mian, A; Hussain, I; Munir, S; Ahmed, I; and KHAN, A.A. 2009. Field evaluation of different grain bait bases against Indian Crested Porcupine, *Hystrix indica*. Pak. J. Zool. 41(1): 7-15
138. Munir, R; A. Khanam; M. Afzal and M. Hussain 2009 Serological Responses, Safety and Efficacy of Brucella Abortus Strain 19 Vaccine in Buffaloes. Pakistan J Zool. Suppl. Ser No. 9:xx.xx. In press
139. Mushtaq, T., M. Sarwar, G. Ahmad, M. A. Mirza, T. Ahmad, M. Athar, M. M. H. Mushtaq and U. Noreen. 2009. Influence of prepress solvent extracted cottonseed meal supplemented with exogenous enzyme and digestible lysine on performance, digestibility, carcass and immunity responses of broilers chickens. Journal of Mushtaq, T., M. Sarwar, G. Ahmad, M. A. Mirza, T. Ahmad, U. Noreen, M. M. H.
140. Mushtaq, and Z. Kamran. 2009. Influence of sunflower meal based diets supplemented with exogenous enzyme and digestible lysine on performance, digestibility and carcass response of broiler chickens. Animal Feed Science and Technology. 149: 275-286 (1.882).. doi:10.1016/j.anifeedsci.2008.06.008
141. Mushtaq, M., A. Mian, I. Hussain, S. Munir, I. Ahmed and A.A Khan. 2009. Field evaluation of different grain bait bases against Indian crested porcupine. *Hystrix indica Pakistan Journal of Zoology*, 41(1):07-15.
142. M. Khalid Sohail and Abdul Rehman (2009) “ Determinants of Under-Pricing of IPOs regarding Financial and Non-Financial Firms in Pakistan” *European Journal of Economics Finance and Administrative Sciences*. Issue, 15.

143. M. Arshadullah, M. Anwar and A. Azim. 2009. Evaluation of various exotic grasses in semi-arid conditions of Pabbi Hills, Kharian Range. *J. Anim. Plant Sci.* 19(2):85-89.
144. Mohammad Sajid Nadeem, Mohammad Asif and Tariq Mahmood. 2009. A rare Shink, *Novoeumeces blythianus*, recorded from Nag valley, Kharan, Balochistan *Pakistan Journal of Zoology*. 41(5): 416-417
145. Muhammad Akmal, Xu Jianming. 2009. Microbial Biomass and Bacterial Community Changes by Pb Contamination in Acidic Soil. *Journal of Agriculture and Biological Sciences*, 1: 30- 37.
146. Naeem Ahmad, *Fayyaz-ul-Hassan* & Robert Belford “Effect of soil compaction in the sub-humid cropping environment in Pakistan on uptake of NPK and grain yield in wheat (*Triticum aestivum*) I. Compaction. *Field Crop Res.* 110:50-60. 2009.
147. **Nizami, S.M., S.N. Mirza**, S. Livesly, S. Arndt, J.C. Fox, **I.A. Khan** and T. Mahmood. 2009. Estimating carbon stocks in sub tropical pine (*Pinus roxburghii*) forests of Pakistan. *Pak.J.Agric. Sci.*, 46(4): 266-270
148. Noor, S.,G.M. Ali,U. Rashid, M. Arshad, S Ali and Y. Zafar 2009. Optimization of callus induction and regeneration system for Pakistani wheat cultivars Kohsar and Khyber-87 *Afric. J. Biotech.* 8(20):5547-5551. (Impact factor = 0.567).
149. Naz, Shehla, T. Masud and Malik Adil Nawaz. 2009. Characterization of milk coagulating properties of extract from *Withenia coagulans*, *International Journal of Dairy Technology*. doi: 10.1111/j.1471-0307.2009.00492.x
150. Najeeb U., L. Xu, S. Ali, G. Jilani, H.J. Gong, W.Q. Shen and W.J. Zhou. 2009. Citric acid enhances the phytoextraction of manganese and plant growth by alleviating the ultrastructural damages in *Juncus effusus* L. *Journal of Hazardous Materials*. 170(2-3): 1156-1163. (Impact factor 2.975)
151. Naheed Akhtar, Noreen Moin, Ata ul Mohsin, Ghulam Jilani, Azra Naseem, Javed Khan, Shaheena Yasmin, Irshad Begum, Afzala

- Tashfeen, and Munir Goraya 2008. Resistance in wheat to aphids (homoptera: aphididae) under laboratory conditions. (Accepted by to Pakistan Journal of Agri. Research, October, 2009).
152. Naeem, M., S.G. Compton and H. Shah, (2009). Arthropod communities in different agroforestry landscapes. Pakistan Journal of Zoology. (accepted).
 153. Nyla J, Bushra M, Zubada C, Hamid R and M. Gulfraz. 2009. Study of the factors affecting *Agrobacterium* mediated gene transformation in tomato (*Lycopersicon esculentum* Mill) cv. Riogrande using rice chitinase (*Cht-3*) gene. Pak. J. Bot. 41(5):2605-2614.
 154. Naeem Ahmad, Fayyaz-ul-Hassan & Robert Belford “Effects of soil compaction in the sub-humid cropping environment in Pakistan on uptake of NPK and grain yield in wheat (*Triticum aestivum*) II: Alleviation. Field Crop Res.110:61-68. 2009.
 155. NADEEM. M. S; ASIF, M; AND MAHMOOD, T. 2009. A rare Skink, *Novoeumeces blythianus* recorded from Nag Valley, Kharan, Balochistan. Pak. J. Zool. 41(5).
 156. NADEEM. M. S. 2009. Ecology of Houbara Bustard in Punjab and Nag Valley (Balochistan). VDM Verlag Dr. Muller AG & Co. Germany.
 157. Pirzada, H., Ahmad, S.S., Rashid, A. and Shah, T. (2009) Multivariate analysis of selected roadside plants (*Dalbergia sissoo* and *Cannabis sativa*) for lead pollution monitoring. Pak. J. Bot., 41(4): 1729–1736.
 158. Qureshi, R. A. Waheed and M. Arshad. 2009. Weed communities of wheat crop in district Toba Tek Singh, Pakistan. Pak. J. Bot, 41(1): 239-245 (Impact factor = 0.47).
 159. Qureshi, R. A., Ghufra, M. A., Gilani, S. A., Abbas, G. and Batool, A. 2009. Indigenous Medicinal Plants Used by Local Women in Southeastern Himalayan Region of Pakistan. Pakistan Journal of Botany. 41(1): 19-25.
 160. Qureshi, S. J., Khan, M. A., Arshad, M., Rashid, A. and Ahmad M. (2009) Pollen fertility (viability) status in Asteraceae species of Pakistan. Trakia Journal of Sciences, 7(1): 12–16.

161. Qureshi, R., A. Waheed, M. Arshad and Tallat Umbreen. 2009. Medico-Ethnobotany of Tehsil Chakwal in *Pak. J. Bot.* 41(2):529-538 (Impact factor = 0.47).
162. Qureshi, S.J., M. A. Khan, M. Arshad, A. Rashid and M. Ahmad 2009. Pollen Fertility (Viability) Status Asteraceae Species of Pakistan *Trakia J. Sci.* 878(1): 12-16.
163. Qureshi, R., **Waheed, A.** and Arshad, M. 2009. Weed communities of wheat crop in district Toba Tek Singh, Pakistan. *Pak. J. Bot.*, 41(1), 239-246. **(Impact Factor 0.47).**
164. Qureshi, R*, Waheed, A., Arshad, M. and Umbreen T. 2009. Medico-ethnobotanical inventory of tehsil chakwal, pakistan *Pakistan. Pak. J. Bot.*, 41(2), 529-538. **(Impact Factor 0.47).**
165. Qureshi, R., Wasim Ahmad Khan and Babar Khan. 2009. Study of vegetation and Smooth coated Otter in Chotiari Wetlands Complex, Sanghar, Sindh, Pakistan. *Pakistan Journal of Botany.* 41(5): 2507-2516 (Impact factor = 0.47).
166. Qureshi, R. and G.R. Bhatti. 2009. Folklore uses Amaranthaceae family of Nara Desert, Sindh, Pakistan. *Pakistan Journal of Botany.* 41(3): 1565-1572 (Impact factor = 0.47).
167. Qureshi, R., A. Waheed, M. Arshad and Tallat Umbreen. 2009. Medico-Ethnobotany of Tehsil Chakwal. *Pakistan Journal of Botany* 41(2): 529-538 (Impact factor = 0.47).
168. Qureshi, R. A. Waheed and M. Arshad. 2009. Weed communities of wheat crop in district Toba Tek Singh, Pakistan. *Pakistan Journal of Botany*, 41(1): 239-245 (Impact factor = 0.47).
169. Rehman, H.F., Manzoor, S and Ullah, N. 2009. Conception rate in cattle by using fresh And frozen semen. Proceedings of 29th Pakistan Congress of Zoology held at the University of Sindh, Jamshoro from February 24 to February 26, 2009. pp. 21 (Abstract).
170. Rabbani,G., M. Munir, S.U.K. Ajmal, G. Shabbir and A. Mahmood. 2009. Inheritance of yield attributes in bread wheat under irrigated and rainfed conditions. *S.J. Agric.*, 25(3): 429-439.

171. Rabbani,G., M. Munir, S.U.K. Ajmal, G. Shabbir and A. Mahmood. 2009. Inheritance of yield attributes in bread wheat under irrigated and rainfed conditions. *S.J. Agric.*, 25(3): 429-439.
172. Rasheed M., Ghulam Jilani, Imran Ali Shah, Ullah Najeeb and Tanveer Iqbal. 2009. Genotypic variants of Lentil exhibit differential response to phosphorus fertilization for physiological and yield attributes. *Acta. Agri. Scand.* In press, 2009; 00:0-00.
173. Rabia Imran and Afsheen Fatima (2009) “Transformational Leadership and Organizational Innovation Moderated by Organizational Size”. *Africa Journal of Business Management* Vol. 3, P. 678-684.
174. Rabia Imran (2009) “Influence of Transformational Leadership on Employee Performance”. *A Pakistan Perspective International Journal of Accounting Information Science and Leadership* Vol.2, P. 53-60.
175. Rashid, A. and Adnan, M.N. (2009) Pakistan’s refugees face uncertain future. *The Lancet*, 374, Issue 9683, 13–14. doi:10.1016/S0140-6736(09)61218-6
176. Rasheed, M., G. Jilani, I.A. Shah, U. Najeeb and T. Iqbal. 2009. Improved lentil production by utilizing genetic variability in response to phosphorus fertilization. *Acta Agriculturae Scandinavica, Section B - Plant & Soil Science.* In press. DOI: 10.1080/09064710903183562. (Impact factor 0.407)
177. Rashid A., Ayub N. Ahmad T, and Khan A.G. (2009) Phytoaccumulation prospects of Cadmium and Zinc by mycorrhizal plant species growing in industrially polluted soils. *Environmental Geochemistry and Health*, Springer Netherlands. 31: 91–98.
178. Rasul, G., A. A. Khan, K. S. Khan, and R. G. Joergensen. 2009. Immobilization and mineralization of nitrogen in a saline and alkaline soil during microbial use of sugarcane filter cake amended with glucose. *Biology and Fertility of Soils* 45: 289-296 (*IF* 2008: 1.446)
179. R. Kauser, N. Huma, T. Ahmad and A. Sameen. 2009. Effect of different levels of buffalo milk fat and storage time on physiochemical properties of mozzarella cheese. *Pakistan J Zool. Suppl. Ser No.* 9:xx.xx. In press

180. Rattu, A. R., I. Ahmad, M. Fayyaz, M. A. Akhtar, M. I. Haque, J. I. Mirza and S. N. Afzal. 2009. Virulence analysis of *Puccinia triticina* cause of leaf rust of wheat. Pak. J. Bot. 41(3): June 2009. (accepted)
181. Rais, M., Abbass, D., Khan, M.Z., Khan, I.S., Ghalib, S.A., Tabbassum, F., Akber, G. and Nawaz, R. 2008. Changes in the avifauna of the wetlands of District Sanghar, Sindh, Pakistan. Berkut. 17 (1-2): 13-24 (published in 2009).
182. Rais, M., Khan, M.Z., Ghalib, S.A., Abbas, D., Khan, W.A., Islam, S. and Hussain, A. 2009. Recent records of smooth-coated otter form Sindh. Pakistan Journal of Zoology. 41(5) (413-416).
183. Syed. Dildar H. Bokhari, Talat Gilani, Maqsood Anwar and M. Arshadullah. 2009. Avifauna-crop interactions at NARC campus, Islamabad. Pak. J. Sci., 61(1):51-54.
184. Saleha S. Siddiqui, M. Naeem and Nadeem A. Abbasi (2009). Effect of Planting dates on aphid and their natural enemies in Cauliflower varieties. Pak. J. Bot. 40 (accepted).
185. Syed Kashif Saeed and Dr. Eatzaz Ahmad (2009). "Simulation Analysis of Short & Long-Run Shocks on the Macro-Economy of Pakistan" F.C Journal of Economics. Paper accepted for Publication of the Time of Summer 2009.
186. Shaheen, A., M.A. Naeem, B.A. Stewart, S. Ali and G. Jilani. 2009. Mulching and synergistic use of organic and chemical fertilizers enhance the yield, nutrient uptake and water use efficiency of sorghum. **Pakistan Journal of Botany**. Submitted for publication. (Impact factor 0.470)
187. Shaheen, A., M.A. Naeem 2009. Restoring the land productivity through soil water conservation and improved fertilization in eroded land of pothwar plateau in Punjab province. Pakistan. Submitted in Plant Production Science, Japan.
188. Shaheen, A., M.A. Naeem, G. Jilani and M. Shafiq. 2009. Integrated soil management in eroded land augments the crop yield and water use efficiency. Acta Agriculturae Scandinavica, Section B - Plant & Soil Science. In press. DOI: 10.1080/09064710902960259. (Impact factor 0.407)

189. Shaheen ,A., M.A. Naeem,, G.,Jilani and M. Shafiq. 2009. Integrated soil management in eroded land augments the crop yield and water-use efficiency. *Acta Agriculture Scandinavica*, Section B - Plant Soil Science,1-9
190. Siddique, M., M.T.Siddique, S. Ali and A.S.Javed. 2009. Macronutrient assessment in apple growing region of Punjab. *Soil and Environment*. 28(2): 184-192.
191. Sammi, S. and T. Masud. 2009. Effect of Different Packaging Systems on the quality of Tomato (*Lycopersicum esculentum* Var. Rio Grande) Fruits during Storage. *International Journal of Food Science and Technology*. 44, 918–926.
192. Siddiqui, S. S., M. Naeem and N. A. Abbasi. 2009. Effect of planting dates on aphid and their natural enemies in cauliflower varieties. *Pak. J. Bot.*, 41(6): MS # 09-408. In press.
193. Shah H., Yasmin, T., Fahim, M., Hameed, S. and M.I. Haque. 2009. Prevalence, occurrence and distribution of chili veinal mottle virus in Pakistan *Pak. J. Bot.*, 40(6): 2669-2681.
194. Sarwar, M., M.I. Yousaf, S. Hussain. (2009). Relationship between Achievement Goals, Meta-Cognition and Academic Success in Pakistan. *Journal of College Teaching & Learning*, Vol 6, No. 5, USA, pp. 51-56
195. Sultana, N., M.I. Yousaf, M. Naseer-ud-Din, S. Rehman (2009). The higher the quality of teaching the higher the quality of Education. *Contemporary Issues in Education Research*, Vol. 2, No. 2, USA, pp. 59-64.
196. Shuaib Kaleem, *Fayyaz-ul-Hassan* & Amir Saleem “Influence of environmental variations on physiological attributes of sunflower”. *Afr. J. Biotech.* 8(15):3531-3539, 2009.
197. Shahzad, S.M., A. Khalid, M. Arshad and K.U. Rehman. 2009. Screening rhizobacteria containing ACC-deaminase for growth promotion of chickpea. *Soil and Environment* 29(1): In press.
198. Sajid M and M. Gulfraz. 2009. Ethanol production from *Sorghum bicolor* by using both Separate and Simultaneous Saccharification and

- Fermentation in batch and fed batch Systems. *Afri. J. Biotechnology*. 8(12) 2857-2865.
199. S.M.S. Naqvi, S.Q.Raza, M.Z.Hyder, C.V.Ozalp, H.A.Oktem and Meral Yucel. (2009). Sub-cellular distribution of two salt-induced peptides in roots of *Oryza sativa* L. Var Nonabokra. *Afr.J.Botechnol*.8(18):4613-4617
 200. Saleem, A., S. N. Mirza, I. A. Khan and J. Franklin. 2009. Effect of diverse ecological conditions on biomass production of *Themeda triandra* (Kangaroo grass) at various growth stages. *Afric. J. Bio. Tec.*,8(7)
 201. Saima Siddiqi, Anjum Siddiq, Kamran Majeed, Atika Mansoor, Raheel Qamar, Kehkashan Mazhar, Naseem Ashraf, Salma Kakeel, Azra Khanum and Khalid Mahmood Khan. Y-chromosome deletions- a risk factor for male infertility. *Int. J Agri. Biol.*, 11 (1):110-112, 2009.
 202. Saleem, A., F. U. Hassan, A. Manaf and M. S. Ahmedani. 2009. Germination of *Themeda triandra* (Kangaroo grass) as effected by different environmental conditions and storage periods. *Afric. J. Bio. Tec.*,8(17).
 203. Tahir M., A. Tanveer, T. H. Shah, N. Fiaz and A. Wasaya. (2009). Yield Response of Wheat (*Triticum aestivum* L.) to Boron Application at Different Growth Stages. *Pak. j. life soc. sci.*, 7(1): 39-42
 204. Tanveer Ahmad. 2009. Dietary electrolyte balance in heat stressed broilers: Implications under varying environment. VDM Verlag (May 8, 2009), ISBN: 978-3639146592. 180 pages.
 205. Ullah, N., Anwar, M., Andrabi, S.M.H., Ansari, M.S., Murtaza, S., Ali, Q. and Asif, M. 2009. Effect of Mineral Supplementation on Post Partum Ovarian Activity in Nili-Ravi Buffaloes (*bubalus bubalis*). *Pak. J. Zool.* 41(6) (In press)
 206. Waheed, A., R. Qureshi, G.S. Jakhar and Hayatullah Tareen. 2009. Weed community dynamics in wheat crop of district Rahim Yar Khan, Pakistan. *Pakistan Journal of Botany*, 41(1): 247-254 (Impact factor = 0.47).

207. **Waheed, A.**, Qureshi, R., Jakhar, G.S. and Tareen, H. 2009. Weed community dynamics in wheat crop of district Rahim Yar Khan, Pakistan. *Pak. J. Bot.*, 41(1), 247-254. **(Impact Factor 0.47)**.
208. Yaseen, M., T. Ahmad, N. A. Abbasi and I. A. Hafiz. 2009. Assessment of apple rootstocks M. 9 and M. 26 for *in vitro* rooting potential, using different carbon sources. *Pak. J. Bot.*, 41(2): 769-781. (0.47).
209. Yaseen, M., T. Ahmad, N. A. Abbasi and I. A. Hafiz. 2009. *In vitro* shoot proliferation competence of apple rootstocks M. 9 and M. 26 on different carbon sources. *Pak. J. Bot.*, 41(4): 1781-1795. (IF 0.47)
210. Yousaf, M.I. (2009). Comparative Perspectives of Study Strategies among High and Low Achievers Distance Learning Students. *Turkish Online Journal of Distance Education*, Volume 10, No. 3, Turkey. Pp. 117-127.
211. Xu, L., U. Najeeb, W.Q. Shen, G. Jilani, M. Rasheed, and W.J. Zhou. 2009. Establishment of *Agrobacterium* – mediated *Bt* gene transformation system in mat rush (*Juncus effusus* L.). *Pakistan Journal of Botany*. 41(5): 2615-2624. (Impact factor 0.470)
212. Zehra, S., Arshad, M., Mahmood, T. and **Waheed, A.** 2009. Assessment of heavy metal accumulation and their translocation in plant species. *African J. of Biotechnology* 8 (12), 2802-2810. **(Impact Factor 0.54)**
213. Zehra, S.S., M. Arshad, T. Mahmood and A. Waheed. 2009. Assesment of heavy metal accumulation and their translocation in plant species. *Afric. J. Biotech.* 8(12): 2802-2810. (Impact factor = 0.567).
214. Zareef, S., S. Nasim, S. Kalsoom, F. Jabeen, Z. Javid, M. S. Nadeem and M. A. BEG, 2009. Occurrence of the Norway rat (*Rattus norvegicus*) in Rawalpindi and Islamabad. *Pak. J. Zool.*, 41 (5): 415.
215. Zareef, S; NASIM, S; KALSOOM, S; JABEEN, F; JAVED, Z; NADEEM, M. S; AND BEG, M. A. 2009. Occurrence of the Norway Rat, *Rattus norvegicus*, in Rawalpindi and Islamabad. *Pak. J. Zool.* 41(5).

216. Zehra, S.S., M. Arshad, T. Mahmood and A. Waheed. 2009. Assessment of heavy metal accumulation and their translocation in plant species. *Afric. J. Biotech.* 8(12): 2802-2810.
217. Zulfiqar, B., N. A. Abbasi, T. Ahmad and I. A. Hafiz. 2009. Effect of explant sources and different concentrations of plant growth regulators on *in vitro* shoot proliferation and rooting of avocado (*Persea americana* Mill.) cv. "Fuerte". *Pak. J. Bot.*, 41(5): 2333-2346.
218. Zhang, Q., Y. Chen, G. Jilani, I.H. Shamsi and Q. Yu. 2010. Model AVSWAT apropos of simulating non-point source pollution in Taihu lake basin. *Journal of Hazardous Materials.* 174(1-3): 824-830. (Impact factor 2.975)
219. Zahid, N.Y., N. A. Abbasi, I.A. Hafiz and Z. Ahmad. 2009. Genetic diversity of indigenous fennel germplasm in Pakistan assessed by RAPD markers. *Pak. J. Botany*, 41(4): 1759-1767. (IF 0.47).

PREPARED BY:

PROF. DR. MUHAMMAD IQBAL LONE
Director Research

MR. SHAHID ALI KHAN
Deputy Director (Planning)

DIRECTORATE OF RESEARCH & PLANNING