

ANNUAL REPORT

2011



PIR MEHR ALI SHAH

**ARID AGRICULTURE UNIVERSITY
RAWALPINDI**

P R E F A C E

During the year 2011, Pir Mehr Ali Shah (PMAS) Arid Agriculture University Rawalpindi made substantial efforts to improve academic as well as Research activities alongwith financial resources. Various teaching departments were upgraded/strengthened through the development of infrastructure, procurement of sophisticated scientific equipments and purchase of books etc. The faculty members completed 113 Research Projects worth Rs. 76.8839 million which were sponsored by various funding agencies.

Thirty faculty members were promoted/inducted to over come staff shortage for teaching in different faculties. Professional Development Centre was established at UIIT to facilitate the students for the award of scholarships, seeking employment and unforeseen emerging issues.

Faculty members attended fifty six National/International workshop/ seminars/ symposium/conferences to share/transfer knowledge in different scientific fields with in the country and globally.

The linkage between faculty, Industry and farming community was further promoted/strengthened 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 sharing. The provision of better Research facilities encouraged the faculty to publish 230 Research Papers in National and International reputed journals. With this effort University improved its position in HEC ranking of the Universities and stood 7th out of 116 Universities and 2nd in Agriculture Universities of Pakistan.

ACADEMIC ACHIEVEMENTS

ESTABLISHMENT OF PROFESSIONAL DEVELOPMENT CENTRE

To reduce the gap between academia and industry particularly in the discipline of Information technology, a Professional Developmental Centre (PDC) was established at University Institute of Information Technology (UIIT) to impart training for continuous professional development in the field of project management and information technology. The center will not only enhance the visibility of UIIT and its students in the industry but will also help to generate revenue and further self sustainability. The center will be helpful in building capacity of graduates in terms of sharpening their IT and project management skills as per market needs. The two continuous Professional Development (CPD) courses IT Essentials and Cisco Network Associate (CCNA) are being offered at PDC

NEW DEGREE PROGRAMS INITIATED

The University initiated following three new degree programs which were also approved by the Academic council:

M.Phil in Sociology

BS in Economics

BS in Biochemistry

FACULTY DEVELOPMENT

Faculty Development is a continuous phenomenon in order to achieve academic excellence. Therefore, to improve academic programs, the addition of new faculty is a regular feature at the University. During 2011, PMAS-AAUR management has great coherence, liaison and coordination with faculty in enhancing quality education & research opportunities. Resultantly, PMAS-AAUR is producing useful & trained human resource in specialized sectors of Agriculture, Sciences, Information Technology, Management Sciences and Allied Disciplines. Keeping above in view following new staff was inducted in various departments on the recommendation of the selection board after subsequent approval by the University Syndicate.

Faculty/Institute	Lecturer	Assistant Professor	Associate Professor	Professor	Total
Crop & Food Sciences	-	8	-	-	08
Sciences	1	8	3	1	13
Forestry, Range Management & Wildlife	-	2	-	-	02
Veterinary & Animal Sciences	-	3	1	1	05
University Institute of Information Technology	-	-	-	-	-
University Institute of Management Sciences	-	-	-	-	-
Woman Division	-	-	-	1	01
Sub Campus Khushab	1	-	-	-	01
TOTAL	02	21	04	03	30

SHORT COURSES HELD

In addition to degree programmes, the Faculties of the University organized following short courses in previous year.

❖ Artificial Insemination	02 Months
❖ Livestock Breed Improvement	01 Month
❖ Computer Application	12 Weeks
❖ Communication in English	08 Weeks

STUDENT ENROLLMENT

There has been continuous increase in the student intake in various disciplines and the student enrollment increased from 4183 to 5745 in the last five years. The detail of which is given in table below:

S No	Name of Degree	2007	2008	2009	2010	2011
01	Graduates	1677	1967	2291	2513	2907
02	Post Graduates	2369	2566	2561	2494	2647
03	Doctoral	137	144	160	185	191
	Total	4183	4677	5012	5192	5745

LINKAGE WITH NATIONAL/INTERNATIONAL ORGANIZATIONS

In order to work and carry out research in close co-operation with National and International organizations, the University signed memorandum of understanding (MoU) with the following International/national organizations:

1. Punjab Wildlife & Parks Departments
2. Human Rights & Minorities Affairs Department. Govt. of Punjab, Lahore.
3. Northwest A&F University China
4. Directorate of Wildlife & Fisheries AJK.
5. DELL Pakistan

DOCTORAL /POST DOCTORAL TRAININGS / SHORT-TERM TRAININGS

The faculty members were encouraged to improve their qualifications and visit universities abroad to update their technical knowledge and transfer technical know how back home from international universities/institutes. In the objectivity, two faculty members completed Ph. D in the field of Horticulture and Entomology from China and UK respectively. Three faculty members obtained post-doctoral fellowship from HEC and executed research work in USA & UK. Moreover, nine faculty members proceeded on short-term trainings/courses in China, Nepal, Australia, Thailand, Malaysia, UK & Canada.

ESTABLISHMENT OF OFFICE OF RESEARCH, INNOVATION AND COMMERCIALIZATION (ORIC)

The Office of Research, Innovation & Commercialization (ORIC) a central staff office reporting to the Vice Chancellor, is charged with administrative responsibility for all University research and related activities involving extramural sponsorship. In fulfilling its duties, the Office of Research serves as both a centre of advocacy for research and related activities, and facilitator of the research environment. The functional areas supported by Office of Research staff include information services, project & proposal development assistance, grants and contracts administration for pre-award and selected post-award tasks. All proposals submitted by University personnel must be transmitted to /and reviewed by Office of Research staff to assure

adherence to internal and external policies and procedures. The Director of the Office serves as the designated University Officer for all related matters.

The Office of Research, Innovation & Commercialization seeks to enhance the environment for all research and scholarships by:

- Supporting the university's strategic research directions and policies
- Increasing and diversifying external research funding
- Improving recruitment and retention of top faculty
- Improving integration of research and education at all levels of the university
- Improving translation of research into the public benefit
- Strengthening university-industry relationships
- Promoting entrepreneurship, technology-transfer and commercialization activities that energize and support the local and national economy
- Promoting and enhancing crosscutting and multi-disciplinary research initiatives

RESEARCH FOCUS

University faculty focused their research activities on the issues of farming community of Barani areas in general and Pothwar in particular. These included projects related to soil conservation, weed management, drought tolerance studies in wheat through genetic engineering and environmental related issues. The following Research projects were operational during 2011.

- ❖ Comparative economics of fish farming in four districts of Pothwar region
- ❖ Population size, food habits and economic importance of commensal rodents in rural Pothwar
- ❖ Screening of different avian egg yolks for cryopreservation of buffalo semen: a step to improve fertility in buffaloes with frozen semen
- ❖ Establishing year-round rearing facilities of bumble bees, important pollinator of commercial fruit and vegetable crops.
- ❖ Characterization of putative promoter elements in OsRGLP2 promoter region
- ❖ Determination of biological activities and micro propagation of polygonum amplexicaulis; a popular medicinal plant of North Pakistan
- ❖ Biodiversity and ecology of bats and rodents in the thorn forests and croplands of the Pothwar plateau

- ❖ Studies on characterization and management of leaf crinkle virus infecting black gram
- ❖ Utilization of plant growth promoting rhizobacteria for the induction of systemic resistance in potato seed against bacterial rot diseases
- ❖ Strengthening informal seed supply system at two locations in Pothwar through participatory technology transfer
- ❖ Rhizobacterial formulations application technology for the control of major pathogenic root infecting fungi in chickpea for sustainable crop production
- ❖ Technology transfer to potato growers in relation to pathogen free seed potato, management of diseases and adoption of improved agro-techniques
- ❖ Evaluation of biochar as useful soil amendment for improving soil quality and crop productivity
- ❖ Expression analysis of GSNOR gene in maize plants undergoing abiotic stresses
- ❖ Profiling wheat germplasm for drought tolerance based on physio-morphic markers
- ❖ Prevalence, identification and partial characterization of major mosaic viruses infecting ornamental plants in Rawalpindi and Islamabad cities.
- ❖ Surveillance and epidemiology of wheat head/seed diseases and morphological characterization of species involved in the parasitic complexes
- ❖ Establishment of protocol for protoplast fusion of different citrus cultivars
- ❖ Biochemical and physiological monitoring of stress and cardiovascular diseases in different age groups of urban population
- ❖ Interrelationship of different cellular immunity & antioxidant parameters and egg characteristics in layers under different feed additives
- ❖ Determination of pollutants from amphibians and mammals species and their remedial measures through plant extracts
- ❖ Epidemiological studies for identification of risk factors of gastrointestinal parasite of cattle in Tehsil Rawalpindi
- ❖ Physicochemical and hygienic quality of the raw milk and tetra pack milk available at various areas in Rawalpindi
- ❖ Comparative epidermal toxicity studies of lambda cyhalothrin and cyflorpyrifos after topical application in rabbits
- ❖ Comparative evaluation of cefepime HCL and imipenem in the treatment of induced intra-abdominal sepsis in the dogs

- ❖ Evaluation of black seed (*Nigella Sativa*) oil in the amelioration cytokine level during endotoxic shock in rabbits
- ❖ Evaluation of acrosomal status of red jungle fowl spermatozoa with bright field phase contrast and differential interference contrast microscopy
- ❖ Isolation and molecular characterization of forest soil bacteria enhancing tree seed germination and growth
- ❖ Potential of biochar from *lantana camera l.* to sequester carbon in different simulated ecological zones
- ❖ Removal of some selected emergent pollutants by constructed wet lands
- ❖ Diversity of amphibians and reptiles in different land management units of agro-ecosystem of Chakwal district
- ❖ Occupational exposure and health risk analysis in relation to PHA-DNA adducts in urban population

RESEARCH PROJECTS FUNDING

The PMAS-AAUR Faculty also undertook Research Projects in addition to teaching assignments. These projects were sponsored by different funding/donor agencies. During 2011, the faculty earned 35 Research Projects amounting to Rs. 47.672 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	07	30.279
2.	Pakistan Science Foundation	04	8.186
3.	Endowment Fund UAF	04	6.663
4.	University Own Resources	20	2.544
	Total Rs. In Million	35	47.672

In addition to above mentioned projects, University also completed following 113 research projects, sponsored by different funding agencies worth Rs. 76.883 millions:

S No	Name of Funding Agency	No of Projects	Total Amount Rs. in Million
1.	Higher Education Commission	10	14.2951
2.	Pakistan Science Foundation	07	3.1924
3.	Pakistan Agriculture Research Council	10	16.8484

4.	Ministry of Science & Technology	02	33.875
5.	University Own Resources	84	8.673
	Total Rs. In Million	113	76.8839

ADMINISTRATIVE ACTIVITIES

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 Chief 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 2011, two meetings of Academic Council were conducted, wherein revised/amended and new curricula for Undergraduate and Postgraduate 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 2011 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.

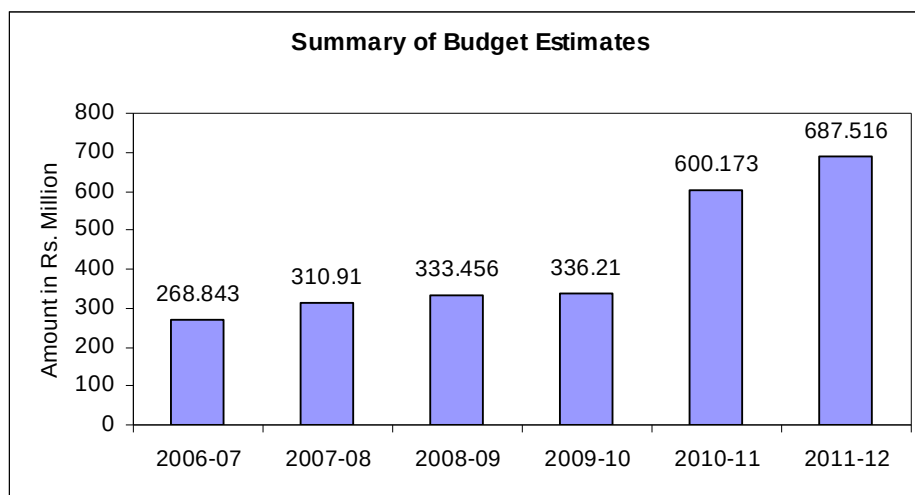
ADVANCED STUDIES & RESEARCH BOARD

In the academic year 2011, Advanced Studies & Research Board was met for three times; 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-UAAR for the year 2011-12 was escalated up to Rs. 687.516 millions in comparison to correspondence year's budget amounting to Rs: 600.173 millions.



TECHNOLOGICAL INFRASTRUCTURE

Digital Library

HEC National Digital Library (DL) is a programme to provide researchers within public and private universities in Pakistan and non-profit research and development organizations with access to international scholarly literature based on electronic (online) delivery, providing access to high quality, peer-reviewed journals, databases, articles and e-Books across a wide range of disciplines. The e-books support programme will allow researchers to access most of the important text and reference books electronically in a variety of subject areas. Around 75,000 number of electronic contents have been made available through the Digital Library Programme.

The Faculty Members/Researchers/Scholars of the University is taking full advantage of the above mentioned facility in the form of e-library and access to the internet.

The new resources were added in the last year and changes will appear on the website page soon. The new sources are as follows:

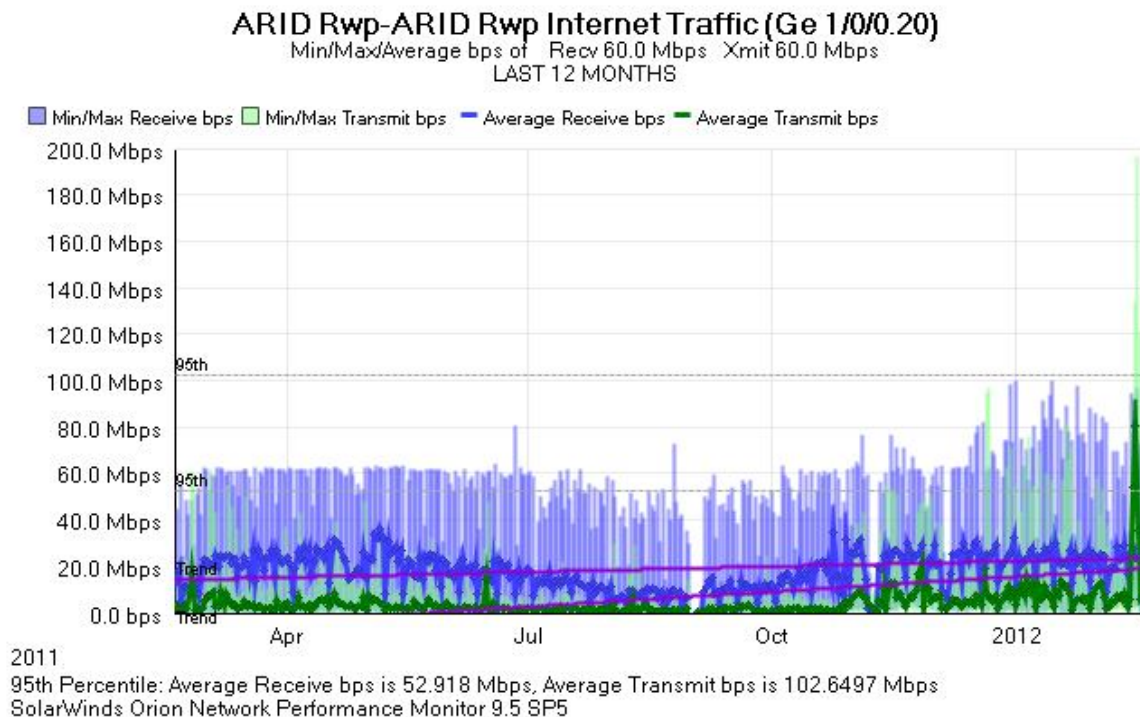
- Informs
- Duke University press
- IET library
- American Society Of Agriculture and Biological Society
- Canadian Science publishing
- International Forestry Review
- University of Chicago Press
- Royal College of Physician
- World Bank Library

Their access of URLs is as follows and one may test on access and disperse the information for these resources to the most of the scholars.

<https://elibrary.asabe.org/>
<http://www.ingentaconnect.com/content/nrc>
www.dukejournals.org
<http://digital-library.theiet.org/>
<http://journals.informs.org/>
http://www.cfa-international.org/international_forestry_review.php
www.journals.uchicago.edu
<http://elibrary.worldbank.org/>

PERN2

Pakistan Education & Research Network PERN2 establish a high speed dedicated link for the universities/institutes and other academic sectors of Pakistan. PERN2 provides students, faculty members and researchers a fully integrated and dedicated communication infrastructure using advanced Information & Communication Technologies. Following graph shows the last 12 months usage of the Internet traffic.



Video Conferencing

Video Conferencing facility is available at the University Institute of Information Technology where following activities were undertaken during 2011.

- Assistant Professor Dr. Fazal Mehmood, Pathology, University of Agriculture, Pakistan will deliver his talk on “*Pathology and Diagnosis of Rabies*” on 7th October, 2010 at 11:00 am.
- “Determining Humanitarian Needs After Pakistan Floods” on 11th Nov 2010 @ 1830 Hrs.
- “IPv6 Workshop” on 23rd Dec 2010 @ 1100hrs-1700hrs.

- “2nd International Conference on Machine Vision by College of Telecommunication Engineering NUST” on 29th, 30th, 31st Dec 2010 @ 8:30am onward.
- “Seminar on Relative Grading by IBA Karachi” on 19th Jan 2011@ 8:30am to 4pm.
- “Neural Networks and Its application” on 31st January 2011.
- “National Symposium on Quantum Information Processing (NSQIP)” on 9th April 2011.
- "How to Write Scientific Manuscripts for High Impact Factor Journals?" on July 23, 2011.
- “Centralized Service Level Agreement for Video Conference Codec by HEC” on 21st Oct 2011.

CAMPUS MANAGEMENT SOLUTION

Campus Management Solution is the most effective tool that has automated the management functionality of this university by streamlining the processes involved. It has reduced the manual handling of processes and thus helps in effective and accurate outcomes. CMS also helps in maintaining transparency in admissions and accounts processes and reduces administrative overhead by providing powerful services. It helps in effective decision making of authorities by generating reports from different aspects. This system was introduced in this university in the year 2010 and since then the performance of this system is improving day by day. At present the following modules are working in this system.

Campus Management Modules.

- Admissions Module
- Academic Module
- Examinations Module
- Personnel Module

The **Admission Module** automates the admission process of the university and streamlines the process involved for efficient and effective management. This module starts with the admission offered by the University for the new Session. Then prospectus sale starts. This module keeps track of all the informations Department wise / Degree wise.

Total number of prospectus soled in Fall-2011

= 8644

Total number of Students Applied for Admission in Fall-2011 = 7890

The system first keeps record of the entire candidate that applied for various degree programs offered by the university and automate the process of merit lists generation and fee submission process. Not only this but it also provided the facility to transfer the degree of student if required and transfer the fee structure accordingly.

Total number of Students got Admission in Fall-2011 = 2382

In the **Academic Module** the complete academic record of each student has been maintained in this system. It includes Enrolments, Course Offering, Scheme of Study, Students Attendance, Teacher Course Evaluation etc.

In the **Examination Module** the complete examinations record of each student has been managed. This helps in preparation of DMCs / Degrees as well.

In the **Personnel Module** the Employees record has been maintained. All these modules produced different reports that help the management in proper decision making. The next target of the CMS team is to develop an online Admission System.

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 (On-Going)	Cost (million Rs.)
• Establishment of Faculty of Veterinary & Animal Sciences	468.620
• Establishment of University Institute of Biochemistry & Biotechnology	358.619
• Development On Farm Students Research Facilities	343.224
• Establishment of R&D Facility in Hydroponic	52.546
• Strengthening of Department of Wildlife Management	36.141
• Strengthening/ Up gradation of Library Facilities at PMAS-AAUR	41.021
Total	1300.171

In addition to above Development projects, following construction works were completed in the University during the year under report:

Work	Cost (million Rs.)
• Construction of Residential Flats for Grade 1-10	24.951
• Construction of Residential Flats for Grade 15-17	20.165
• Construction Work at University Sports Ground	4.419
• Extension / Rehabilitation of University Mosque	19.023
• Construction of Shed / Store for Store Department at Main Campus	1.684
• Construction of Transport Shed Near Gate # 03, PMAS-AAUR	2.523
• Development of Road between New Academic Blocks of UIBB, FV & AS	2.000
• Extension of Data Centre at Main Library	0.649
• Construction/Rehabilitation of three officers residences at Agriculture Colony, Murree Road, Rawalpindi	4.500
Total	79.914

DELEGATES & VISITS

1. President of Islamic Academy of Sciences Uganda and the Vice Chancellor of Uganda University comprising of five persons visited Department of Horticulture on 10.03.2011.
2. A delegation headed by the Vice Rector, Institute of Agriculture, Bogor University including Dr. Anas Mftah Fauzi, Dr. Agus Purwito, Head Department of Agronomy and Horticulture, Professor Dr. Eriytno, Professor Dr. Rhredy Poerwanto, Dr. Yasmin Shaukat, Dean Faculty of Economic and Management & Embassy Officials visited the Tissue Culture Laboratory. Cultures of different plant genotypes were examined. Prof. Dr. Nadeem Akhter Abbasi and Dr. Ishfaq Ahmad Hafiz gave briefing on 18.03.2011. The delegation appreciated the work being done in the Laboratory.
3. A delegation comprising of 12 persons from DMG group of services (from NIPA) visited tissue culture Laboratory. The delegation was briefed about the multiplication of Pathogen free Potato, Olive and Gerbera Plants on 19.04.2011.
4. Henry C. Harmon, Senior Advisor (USA) Pakistan Agriculture and Cold Chain Development Project visited Laboratory, Department of Horticulture and showed interest in collaboration. Prof. Dr. Nadeem Akhtar Abbasi briefed regarding postharvest technology, Dr. Khalid Mahmood Qureshi present prospects of soft fruit cultivation in Pakistan and Dr. Ishfaq Ahmad Hafiz briefed regarding training in tissue culture Laboratory on 27.04.2011.
5. Nepalian delegation comprising four persons one Progressive Farmer, Agriculture Office Ram Kriehem. Prof. Dr. Nadeem Akhtar Abbasi gave briefing to the delegation regarding the status of Agriculture and particular Horticulture crop production in Pakistan. Dr. Ishfaq Ahmad Hafiz, Dr. Khalid Mahmood Qureshi and Mr. Hammad Aziz khan attended the meeting. Delegation visited the field area, Green House, Tunnels. The delegation wished to collaborate in training programs and asked to send students to Nepal for research purpose.
6. Two visits of experts from Winroch International, USA. Mr. Danial Jerome Gudahl, Mr. Don and Mr. Henry discussed about the cool chain project to be launched in Bolochistan and how the post harvest section of Department of Horticulture PMAS-AAUR can help to resolve any possible issue during postharvest handling of fruit and vegetables. The

possibilities of coordination of Winroch and Department of Horticulture were the main focus of discussion.

7. Prof. Dr. Muhammad Ashraf, Chairman, Department of Agronomy visited to Monsanto Private Limited, DHA, Lahore along with Faculty Members of Faculty of Crop & Food Sciences on May, 2011.
8. Prof. David Crowley, University of California, Riverside visited Department of Environmental Sciences of PMAS-AAUR to deliver International Seminar on 11.04.2011.
9. A Korean delegation visited to Department of Environmental Sciences, PMAS-AAUR for scientific collaboration and application of environmental friendly water (AHA-Korea OCAS) in plant growth experiments on 09.05.2011.
10. Scholarship Award Ceremony of Punjab Educational Endowment Fund (PEEF) was conducted on 14.05.2011 for 125 students. Senior Manager PEEF, University Faculty & Administration also attended the program.
11. The KOICA (Korean International Cooperating Agency) officials led by their **Chief Jeon, Jun Ho** from Embassy Republic of Korea, Islamabad visited this University on 10th & 11th of October 2011 in order to finalize the development project titled ***“Establishment of Rural Technology Transfer Center in Punjab Pakistan”*** funded by KOICA.
12. An interactive meeting & cheque distribution ceremony of scholars of PEEF was conducted on December 14, 2011 in University Seminar Room. Local Parliamentarians of Rawalpindi (Mr. Shakeel Awan (MNA) & Ms. Najma Hameed (Senator)) and Prof. Dr. Muhammad Munir, Dean (FC&FS) were guests of the honor.
13. Dr. Marliyn (Madam Ambassador, United States of America) & Prof. Dr. Sohail Naqvi, Executive Director Higher Education Commission visited University on 30.01.2012 for an Interactive Session with USAID - Merit & Need Based Scholarship Awardees of session 2011 & Alumni.

SEMINARS, WORKSHOPS & CONFERENCES

To hold Seminars, Workshops and Conferences are regular feature of the universities where experts from various fields are invited to share their experience with faculty, students & researchers on current issues of international and national importance 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 2011, different departments of the University organized three (3) International and eight (8) National Workshops/Seminars/Conferences. The university faculty also participated and contributed research papers in ten (10) International and thirty five (35) National Workshops/Seminars/Conferences. A brief detail of each is given below:

Seminars, Workshops & Conferences held at University

i. National.

1. Dr. Muhammad Akmal, Assistant Professor, Department of Soil Science & SWC attend the training on Project Planning, Financial Management, Student Assessment and Evaluation at PMAS-Arid Agriculture University Rawalpindi on March 10, 2011
2. Ms. Faria Ibad Mirza, Lecturer, Department of Sociology attended a Seminar on “Improving Teaching through Skilled Questioning at PMAS-AAUR on March 24, 2011
3. The Department of Horticulture, PMAS Arid Agriculture University Rawalpindi and The National Horticulture Society of Pakistan jointly organized “Spring Flower festival 2011” from March 30 to April 03, 2011
4. The Department of Biochemistry, PMAS-AAUR organized a workshop on SNP Genotyping: Strategies & Applications in Human Genetics on April 20-22, 2011
5. The Department of Environmental Sciences, PMAS-AAUR conducted National Seminar on Bioremediation: Strategies and Application on June 02, 2011
6. The Department of Environmental Sciences, PMAS-AAUR conducted National Seminar on “Climate change in Pakistan past present and future perspectives” on June 13, 2011.
7. The Department of Horticulture organized one day training Program on “Olive Cultivation- profitable Business” at Rawalpindi on July 28, 2011.
8. Dr. Qaisara Prveen, Assistant Professor, Dr. Malik Ghulam Behlol, Assistant Professor, Division of Continuing Education, Dr. Asif Ahmad, Associate Professor, Dr. Anwaar Ahmed, Assistant Professor, Dr. Farzana Siddique, Assistant Professor, Department of Food Technology, Dr. Asim Gulzar, Assistant Professor, Department of Entomology, Dr. Muhammad Javaid Asad, Associate Professor, Dr. Feroza Hamid Wattoo, Assistant Professor, Department of Biochemistry, Dr. Zahid Akram, Associate Professor, Department of Plant Breeding & Genetics and Dr. Muhammad Akmal, Assistant Professor, Department of Soil Science & SWC attended Research Workshop on Citation & Referencing in Research Using EndNote X5 organized by Quality Enhancement Cell, PMAS-AAUR on August 25, 2011.

ii. International:

1. The Department of Environmental Sciences, PMAS-AAUR conducted International seminar on “Recent Advances in Development of Biochar Technologies for Sustainable Agriculture” on April 11, 2011
2. Dr. Muhammad Akmal, Assistant Professor, Department of Soil Science & SWC attend the International Seminar on Recent Advances in Development of Biochar Technologies for Sustainable Agriculture organized by Department of Environmental Sciences, PMAS-AAUR on April 11, 2011
3. The Department of Forestry & Range Management, PMAS-AAUR conducted an international Seminar on "Sustenance of Trembesi Tree in Pakistan and Indonesia for environmental Protection. Sponsored by The Embassy of Republic of Indonesia on November 24, 2011

Seminars, Workshops & Conferences attended by the Faculty

i. National

1. Dr. Farzana Siddique, Assistant Professor, Department of Food Technology attended "International Conference on Technological and Scientific Aspects of Dairy Products with Special Reference to French Cheeses" at NIFSAT, UAF, Pakistan on February 21-23, 2011.
2. Ms. Faria Ibad Mirza, Lecturer, Department of Sociology participated in International Seminar on “Poverty alleviation through Sustainable Resource Management” organized by NASIC in collaboration with IAP, TWAS, COMSTECH and Pakistan Academy of Sciences at Islamabad on March 08-10, 2011.
3. Prof. Dr. Azra Khanum, Department of Biochemistry attended International Workshop on “Frontiers in Molecular Biology and Biotechnology” at Islamabad, Pakistan on March 28-29, 2011.
4. Dr. Azeem Khalid, Associate Professor and Ms. Beenish Saba, Lecturer, Department of Environmental Sciences attended the International Seminar on “Agriculture productivity under stress environment” at Institute of Soil and Environmental Sciences University of Agriculture Faisalabad on April 13, 2011.
5. Ms. Faria Ibad Mirza, Lecturer, Department of Sociology attended the workshop on Promotion of Social Sciences Research in Pakistani Universities: Prospects and Challenges at HEC, Islamabad on April 18-20, 2011.
6. Mrs. Pakeeza A. Shaiq, Lecturer, Department of Biochemistry attended workshop on Role of Biotechnology in sustainable development at COMSTECH, Islamabad on April 19-21, 2011.
7. Prof. Dr. Azra Khanum, Department of Biochemistry, attended the Workshop on SNP Genotyping: Strategies and Applications in Human Genetics at PMAS-AAUR on April 20-22, 2011.
8. Dr. Maqsood Anwar, Associate Professor, Department of Wildlife Management participated in the National Consultative Workshop on “NAP Review and Gap Analysis/Launch of NAP Alignment Process in Pakistan”. Sustainable Land Management Project /Ministry of Environment, Islamabad on April 26-27, 2011.
9. Ms. Faria Ibad Mirza, Lecturer, Department of Sociology attended a consultative meeting on situation of youth in Pakistan. Four groups had worked on the study

design and development of questionnaire relating to four broader issues confronting youth. Interaction with HEC, UNDP, USAID and Pathfinder International was made at HEC, Islamabad on May, 2011.

10. Prof. Dr. Azra Khanum, Department of Biochemistry, attended the workshop on Implications for the future of Humankind. Techno Moot: Science for Development at COMSATS Institute of Technology, Abbotabad on May 09-10, 2011.
11. Dr. Rabia Iman, Assistant Professor and Mr. Shuja Ilyas, Lecturer, University Institute of Management Sciences participated in 1st International Case Conference of the Asian Journal of Management Cases (SDSB-AJMC 2011) Pakistan Organized by Suleman Dawood School of Business, Lahore University of Management Sciences (LUMS), Lahore on May 24-26, 2011.
12. Prof. Dr. Fayyaz Ul Hassan and Mr. Allah Wasaya, Lecturer, Department of Agronomy attended the International Seminar on "Crop Management: Issues and options" at University of Agriculture, Faisalabad on June 1-2, 2011.
13. Dr. Qaisara Prveen, Assistant Professor, Division of Continuing Education, attended Training Workshop on "Women Empowerment" organized by AHK NCRD on June 01-03, 2011.
14. Prof. Dr. Nemat Ullah, Dean, Faculty of Veterinary & Animal Sciences, attended the joint USDA/FAO Workshop on the Project Progressive Control of Foot and Mouth Disease at Marriot Hotel, Islamabad on June 04, 2011.
15. Dr. Imran Bodlah, Lecturer, Department of Entomology attended the National Symposium on Biodiversity of Pakistan, 2011 at Pakistan museum of natural History on June 07- 09, 2011.
16. Dr. Asim Gulzar, Assistant Professor, Department of Entomology attended one week training course on "Project Planning" conducted by MPDD Lahore on June 13-17, 2011.
17. Dr. Muhammad Imran Yousuf, Associate Professor, Division of Continuing Education, attended "1st TOT workshop on Test Construction Techniques" at Learning Innovation Division, HEC, Islamabad on June 14-17, 2011.
18. Prof. Dr. Tariq Mahmood, Dr. Audil Rashid, Assistant Professor and Ms. Beenish Saba, Lecturer, Department of Environmental Sciences attended the National Symposium on Emerging challenges and advances in wastewater management at Department of Environmental Science Institute of chemical and biological Science (ICBS) University of Gujrat on June 23, 2011.
19. Prof. Dr. Tariq Mahmood, Dr. Azeem Khalid, Associate Professor and Ms. Beenish Saba, Lecturer, Department of Environmental Sciences attended the National workshop on Stocktaking of GHG Inventory Development in Pakistan at Global Change Impact Studies Center Islamabad on June 25, 2011.
20. Dr. Maqsood Anwar, Associate Professor, Department of Wildlife Management participated in the National Consultative Workshop on "Review of National Agriculture Policy Documents in the context of SLM, NAP & UNCCD". Sustainable Land Management Project /Ministry of Environment, Islamabad on June 27, 2011.
21. Prof. Dr. Safdar Ali, Department of Soil Science & SWC attended three days workshop for the evaluators of NAEAC by foreign expert at HEC, Islamabad on June 27 - 29, 2011.
22. Dr. Malik Ghulam Behlol, Assistant Professor, Division of Continuing Education, attended the Workshop on "Case Based Teaching" at Learning Innovation Division, HEC, Islamabad on July 06-07, 2011.

23. Prof. Dr. Muhammad Ashraf, Chairman, Department of Agronomy, Dr. Munir Ahmad, Assistant Professor and Dr. Muhammad Asif Aziz, Lecturer, Department of Entomology attended International Conference on Prospects and Challenges to Sustainable Agriculture, Organized by Faculty of Agriculture, AJK University on July 14-16, 2011.
24. Prof. Dr. Tariq Mahmood, Dr. Azeem Khalid, Associate Professor and Ms. Beenish Saba, Lecturer, Department of Environmental Sciences attended a workshop on stakeholder consultations towards preparation of Pakistan's Second National Communication to UN Framework Convention on Climate Change at Global Change Impact Studies Center Islamabad on July 27-28, 2011.
25. Dr. Farzana Siddique, Assistant Professor, Department of Food Technology attended the Workshop on "olive cultivation- profitable business" at PMAS-AAUR on July 28, 2011.
26. Mr. Allah Wasaya, Lecturer, Department of Agronomy attended the Workshop on Hands on training on "Modern techniques in Research on Abiotic Stress Tolerance in Plants at NIAB on September 05-09, 2011.
27. Dr. Muhammad Farooq Iqbal, Assistant Professor, Faculty of Veterinary & Animal Sciences, Training Sessions on "Basic Epidemiology and Bio-portal Software" organized by FAO at National Veterinary Laboratories, Islamabad on September 12-13, 2011.
28. Dr. Murtaz ul Hassan, Assistant Professor and Dr. Muhammad Yaqoob, Assistant Professor, Faculty of Veterinary & Animal Sciences attended Training Session on Progressive control of Foot and Mouth Disease in Pakistan organized by FAO at National Veterinary Laboratories, Islamabad on 13-15 September, 2011.
29. Dr. Ghazala Kaukab Raja, Associate Professor, Department of Biochemistry attended the workshop on Biosafety & Bioethics at COMSTECH, Islamabad on September 19-21, 2011..
30. Dr. Muhammad Rasheed, Assistant Professor, Department of Agronomy attended International seed course and workshop at Crop physiology Department , University of Agriculture, Faisalabad on September 27-29, 2011.
31. Dr. Farzana Siddique, Assistant Professor, Department of Food Technology Invited lecture on World Egg Day in Poultry Research Institute (PRI) Rawalpindi on Nutritive Value of Egg on October 14, 2011.
32. Dr. Azeem Khalid, Associate Professor, Dr. Audil Rashid, Assistant Professor and Ms. Beenish Saba, Lecturer, Department of Environmental Sciences attended National Impact assessment programme: Strengthening of EIA curricula in tertiary level institutions at organized by IUCN and Planning Commission on October 20, 2011
33. 18 students of Arid Agriculture University (who are PEEF Scholars) attended an Entrepreneurial Skills Development Workshop in October & November at Youth Development Centre, Murree.
34. Prof. Dr. Nemat Ullah, Dean, Faculty of Veterinary & Animal Sciences participated in National Workshop on Strategies on Improvement in Livestock Reproduction organized by Society for Animal Reproduction of Pakistan (SARP) at University of Veterinary and Animal on November 19, 2011
35. Dr. Tariq Mahmood, Assistant Professor, Ms. Bushra Allah Rakha, Lecturer, Mr. Muhammad Rais, Lecturer, Department of Wildlife Management attended and presented research papers in 31st. Pakistan Congress of Zoology (International), at University of Azad Jammu & Kashmir, Muzaffarabad, AJ&K.

ii. International

1. Dr. Muhammad Tariq, Assistant Professor, Department of Entomology participated in Preparing for Interviews workshop organized by Graduate School, Imperial College London on January 21, 2011.
2. Dr. Rabia Iman, Assistant Professor, University Institute of Management Sciences attended and presented paper in the International Management Conference (IMaC 2011) Malaysia Organized by University Zain al Abidin, UNISZA, Kuala Terengganu, Malaysia on April 16-17, 2011
3. Dr. Muhammad Tariq, Assistant Professor, Department of Entomology attended the Royal Entomological Society Insects conservation meeting at Rothamsted Research, Harpenden, UK on May 12, 2011
4. Dr. Muhammad Tariq, Assistant Professor, Department of Entomology attended the Effective Grant Writing workshop organized by British Ecological Society, Charles Darwin House, London, UK at May 20, 2011
5. Prof. Dr. Nadeem Akhter Abbasi, Chairman, Department of Horticulture participated and presented paper "Foliar spray of ethanol affected fruit growth, yield and postharvest performance of 'Sahil' tomato" in 4th ISHS Conference on "Postharvest Unlimited" in Leavenworth, Washington, USA on May 23 – 26, 2011
6. Prof. Dr. Azra Khanum, Department of Biochemistry attended working session on Tuberculosis at Cairo, Egypt on July 24-26, 2011
7. Dr. Tariq Mahmood Assistant Professor and Mr. Muhammd Rais, Lecturer, Department of Wildlife Management attended and presented research paper in the 2nd World Biodiversity Congress 2011, at Four Points by Sheraton, Kuching, Sarawak, Malaysia on September 08-12, 2011
8. Dr. Muhammad Tariq, Assistant Professor, Department of Entomology attended the 12th European Ecological Federation Congress, Spain, organized by Spanish Association for Terrestrial Ecology in collaboration with the Portuguese Ecological Society on September 25 -29, 2011
9. Prof. Dr. Safdar Ali Department of Soil Science & SWC attended inception workshop on "watershed rehabilitation project" International Centre for Agricultural Research in the Dry Areas (ICARDA) on September 27-28, 2011
10. Dr. Audil Rashid, Assistant Professor, Department of Environmental Sciences participated in Paper presentation at International conference On Urban health in Brazil on October 30 to November 06, 2011

STUDENTS EXTRA CURRICULAR ACTIVITIES

Following co-curricular activities were performed by Directorate of Students Affairs during the year 2011.

- | | | |
|-----|--|-----------------------------|
| 1. | Drama/Long Play | January 2011 |
| 2. | Student Open Forum | January 2011 |
| 3. | Mehfil-e-Naat | February 2011 |
| 4. | Naat Competition | March 2011 |
| 5. | Students Week 2011 | March to April, 2011 |
| | Inter Faculty competitions | |
| | -Soft ware competition | |
| | -Poster competition | |
| | -Flower Arrangement Competition | |
| | -Games Competition | |
| | -Writing Competition(Essay & Story) | |
| | -Art Exhibition | |
| | -Urdu Mushaira | |
| | -Drama Competition | |
| | -Photography | |
| | -Video games | |
| | -Regional Dress Show | |
| | Inter University Competitions | |
| | -Qiraat & Naat Competition | |
| | -Solo performance Competition | |
| | -Bilingual Declamation | |
| | -Arfana Kalam competition | |
| | -Video making competition | |
| 6. | Punjabi Debate | May 2011 |
| 7. | Drama/Long Play | June 2011 |
| 8. | Orientation for New Enrolled Students | October 2011 |
| 9. | Qiraat & Naat Competition | October 2011 |
| 10. | Bilingual Declamation | October 2011 |
| 11. | Arfana Kalam | November 2011 |
| 12. | Quaid-e-Azam Week Celebrations | December 2011 |
| | i) Essay/Story Writing | December 2011 |
| | ii) Quiz Competition | December 2011 |
| | iii) Mushaira | December 2011 |
| | iv) Skits | December 2011 |

SPORTS ACTIVITIES

The Directorate of Sports is working hard for the promotion of sports and healthy activities at PMAS-Arid Agriculture University. The beautiful and prestigious **Khalid M. Khan Gymnasium** has been completed in the university premises in 2010. The Inaugural ceremony was held on 07-10-2010. The gymnasium was beautifully decorated on this jubilant occasion. His Excellency Prof. Dr. Khalid Mahmood Khan SI, Vice Chancellor, PMAS-Arid Agriculture University was the chief guest on this jubilant occasion. Deans, Directors, Chairmen, Faculty Members and a large number of students attended everlasting unveiling ceremony.

The following **Intersivity Championship 2010-11** were organized by Directorate of Sports at **Khalid M. Khan Gymnasium**, PMAS-Arid Agriculture University Rawalpindi.

- **Intersivity Badminton Championship 2010-11 Zone “C” Jan. 26-29, 2011**

Sixteen Universities from Rawalpindi/Islamabad and AJ&K participated in the championship. AJ&K University of Muzaffarabad stood first while University of Engineering Taxila stood 2nd.

- **All Pakistan Intersivity Girls Volleyball Championship 2010-11. Feb. 06-08, 2011**

PMAS-AAUR and HEC, Islamabad jointly organized the all Pakistan Intersivity Girls Volleyball Championship 2010-11 at Khalid M. Khan Gymnasium. Sixteen Universities from Pakistan participated in the championship. Mr. Tallat Khurshid, Director General, Sport, HEC was the Chief Guest on the opening ceremony of the championship. The final was played between Punjab University, Lahore and G. C University, Faisalabad. Punjab University, Lahore was the winner while G. C. University Faisalabad stood 2nd. Prof. Dr. Riaz Qureshi, Advisor, HEC was the Chief Guest on the final of the Championship. He appreciated the efforts of HEC and PMAS-AAUR for organizing the championship in a befitting manner.

PMAS-AAUR students teams also participated in the following Intersivity Sports Championship during 2010-11.

- **Intersivity Table Tennis Championship 2010-11 Zone “C” November 08-10, 2011**

The championship was held at COMSATS. PMAS-AAUR boys team participated in the championship.

- **All Pakistan Intervarsity Volley Ball Championship 2010-11 March, 01-05, 2011**

The Championship was held at University of Peshawar, Peshawar and PMAS-AAUR team participated in the championship.

- **Inter University Cricket Championship (Zone “C”) 2010-11, Feb. 22-24, 2011**

The Championship was held at Quaid-e-Azam University, Islamabad and PMAS-AAUR team participated in the championship.

- **Inter University Basket Ball Championship (Zone “C”) 2010-11, January 03-05, 2011**

The Championship was held at International Islamic University, Islamabad and PMAS-AAUR participated in the championship 3

- **All Pakistan Inter University Tug of War Championship 2010-11. March, 12-16, 2011**

The Championship was held at Bahuddin Zakaria University, Multan and PMAS-AAUR participated in the championship

- **All Pakistan Inter University Shooting Ball Championship 2010-11. March 17-23, 2011**

The Championship was held at Mahran University, Tandojam, Sindh and PMAS-AAUR participated in the championship.

The following Inter Faculty sports Championship was organized by Directorate of sports PMAS-AAUR during 2010-11.

- **INTER FACULTY VOLLEYBALL (Boys) CHAMPIONSHIP 2010-11**

Inter Faculty Volleyball (Boys) Championship 2010-11 was organized at Khalid M. Khan Gymnasium. In which all Faculties, UIMS and UIIT teams participated in the Championship. In the final Agriculture Sciences beats Management Sciences 3-2 in an exciting match.

- **INTER FACULTY BASKETBALL (Boys) CHAMPIONSHIP 2010-11**

Inter Faculty Basketball (Boys) Championship 2010-11 was organized at Basketball court. In which all Faculties, UIMS and UIIT teams participated in the Championship. In the final UIMS beat Faculty of Crop & Food Sciences in a thrilling competition by 23-22 points.

- **INTER FACULTY BADMINTON (Boys) CHAMPIONSHIP 2010-11**

Inter Faculty Boys Badminton Championship 2010-11 was organized in which all Faculties, UIMS, UIIT and BIIT teams participated in the Championship. UIIT stood 1st while UIMS stood 2nd.

- **INTER FACULTY BADMINTON (Girls) CHAMPIONSHIP 2010-11**

Inter Faculty Girls Badminton Championship 2010-11 was organized in which all Faculties, UIMS and UIIT teams participated in the Championship. UIMS stood 1st while Basic Sciences stood 2nd.

- **INTER FACULTY HIKING (Boys & Girls) CHAMPIONSHIP 2010-11**

Inter Faculty Hiking Boys & Girls Championship 2010-11 was held at Margalla Hill Islamabad on April 09, 2011. About 300 students from all faculties and Institutes participated in the Championship. organized in which all Faculties, UIMS and UIIT teams participated in the Championship. UIMS stood 1st while Basic Sciences stood 2nd.

The following **Inter Faculty Sports/Games Championship (Boys)** was organized during **Students Week (March-April 2011)** at University convocation Lawn.

- **Inter faculty Tug of War Championship**
- **Inter faulty Three Leg Race**
- **Inter Faculty Handkerchief Game Championship**
- **Inter Faculty Musical Chair championship**

The following **Inter Faculty Sports/Games Events (Girls)** were organized during Students Week (April 2011) at Girls Hostel.

- **Inter faculty Tug of War Championship**
- **Inter faculty Three Leg Race**

- **Inter Faculty Handkerchief Game Championship**
- **Inter Faculty Musical Chair championship**

UNIVERSITY PUBLICATIONS

JOURNAL OF AGRICULTURE AND BIOLOGICAL SCIENCES

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 Eleven (311) theses were delivered during 2011 by post-graduate students of the university out of which Eighteen (18) theses were received on account of PhD degrees.

FACUTLY PUBLICATIONS

1. **Abbas, G., K. Frooq, I. A. Hafiz, A. Hussain, N.A. Abbasi and G. Shabbir. 2011.** Assessment of processing and nutritional quality of potato genotypes in Pakistan. Pak. J. Agri. Sci. 48(3): 169-175.
2. **Abbas, M., S. M. Nizami, A. Saleem, S. Gulzar and I. A. Khan. 2011.** Biomass expansion factors of *Olea ferruginea* (Royle) in sub tropical forests of Pakistan. Afr. J. Biotech. 10(9):1586-1592.
3. **Abbasi, K. S., T. Masud and S. Ali. 2011.** Physico-chemical, functional and processing attributes of some potato varieties grown in Pakistan. Afr. J. Biotech. (accepted).
4. **Abbasi, K. S., N. Anjum, S. Sammi, T. Masud and S. Ali. 2011.** Effect of coatings and packaging material on the keeping quality of mangoes (*Mangifera indica* L.) stored at low temperature. Pak. J. Nut. 10 (2): 129-138.
5. **Abbasi, K. S., T. Masud, M. Gulfraz, S. Ali and R. U. Qureshi. 2011.** Analysis of selective potato varieties and their functional assessment. Pak. J. Bot. (Accepted).
6. **Abbasi, N. A., A. Hussain and I. A. Hafiz. 2011.** Loquat production in Pakistan and strategies for improvement. Acta Hort. 887: 117-121.
7. **Afsheen, F., A. Qureshi and M. Z. Iqbal. 2011.** Predictors and outcomes of organizational commitment: moderating role of spiritual leadership, presented in 11th National Research Conference at SZABIST, Islamabad, held from January 19-20, 2011.
8. **Afsheen, F., R. Imran and S. H. Awan. 2011.** Emotional intelligence and transformational leadership: finding gender differences. World Applied Sci. J. 14 (11): 1734-1743.
9. **Afsheen, F., S. H. Awan and R. Imran. 2011.** Stress and organizational rewards: predictors of job satisfaction, presented in International Management Conference (IMaC 2011) at Universiti Sultan Zainal Abidin - UniSZA, Taman Tamadan Islam Malaysia, held from April 16-17, 2011.
10. **Ahmad, A., F. M. Anjum, M. A. Randhawa, U. Farooq and S. Akhtar. 2011.** Effect of multiple fortification on the bioavailability of minerals in wheat meal bread. J. Food Sci. & Tech. (Accepted) DOI: 10.1007/s13197-010-0224-9.
11. **Ahmad, A., M. A. Randhawa, M. S. Bhatti, M. J. Yusuf and N. Khalid. 2011.** Effect of processing on pesticide residues in food crops - A review. J. Agri. Res. 49(3): 379.
12. **Ahmad A., F. M. Anjum, T. Zahoor and H. Nawaz. 2011.** Beta glucan: A valuable functional ingredient in foods. Critical Rev. Food Sci. and Nutri. (In Press).
13. **Ahmad A., N. Arshad, Z. Ahmed, M. S. Bhatti, T. Zahoor and A. Afreen. 2011.** Perspective of surface active agents in baking industry: An overview. Critical Rev. Food Sci. and Nut. (In Press). Accepted.
14. **Ahmad, E., N. Ahmad, Z. Naseer, M. Aleem, M. Ashiq, M. Younis. 2011.** Relationship of age on body weight, scrotal circumference, testicular

ultrasonograms and semen quality in Sahiwal bulls. Trop Ani. Health and Prod. 43: 159-164.

15. **Ahmad, F., M. A. Khan, M. Ahmad, M. Arshad, M. Zafar, A. Khan, N. I. Raja and Z. Rehman. 2011.** Foliar epidermal anatomy as an aid of the identification of grasses I tribe aveneae (subfamily pooideae, poaceae) from salt range of Pakistan. J. Med. Plant. Res. 5(1): 81-87.
16. **Ahmad, M., A. Razzaq, A. Qayyum and M. A. Jenks. 2011.** Response of spring type wheat (*Triticum aestivum* L.) cultivars to different chilling treatments. Afr. J. Biotech. (Accepted).
17. **Ahmad, M., A. Shahzad, M. Munir, M. S. Masood and M. Iqbal. 2011.** Evaluation of wheat landrace genotypes for salinity tolerance at vegetative stage by using morphological and molecular markers. Genetics and Molec. Res. (Accepted).
18. **Ahmad, M., A. Shahzad and M. Munir. 2011.** Wheat salt tolerance; morphological and molecular evaluation of Pakistani landraces and exotic genotypes. Lambert Academic Publishing, Germany.
19. **Ahmad, M., F. U. Hassan, A. Razzaq, M.N. Akram, M. Aslam, S. Ahmad and Z. U. Haq. 2011.** Is photothermal quotient determinant factor for spring wheat yield? Pak. J. Bot. 43(3): 1621-1627.
20. **Ahmad, M., F. U. Hassan, M. A. Aslam, M. N. Akram and M. Akmal. 2011.** Regression model to study sole and cumulative effect of temperature and solar radiation on wheat yield Afri. J. Biotech. 10: 9114-9121.
21. **Ahmad, M., F. U. Hassan, U. Qadeer and M. A. Aslam. 2011.** Silicon application and drought tolerance mechanism of sorghum. Afri. J. Agri. Res. 6:594-607.
22. **Ahmad, M and F. U. Hassan. 2011.** Cumulative effect of temperature and solar radiation on wheat yield. Notule Botanicae Horti Agrobotanici Cluj-Napoca, 39(2): 146-152.
23. **Ahmad, M., F. U. Hassan, Y. Khurshid. 2011.** Does silicon and irrigation have impact on drought tolerance mechanism of sorghum? Agri. Water Manag. 98:1808-1812.
24. **Ahmad, M and F. U. Hassan. 2011.** APSIM and DSSAT models as a decision support tools. MODSIM 2011, 19th International Congress on Modeling and Simulation. Modeling and Simulation Society of Australia and New Zealand, December 2011, 1174-1180.
25. **Ahmad, M., M. Munir, A. Shahzad, M. S. Masood and M. Iqbal. 2011.** Evaluation of bread wheat genotypes for salinity tolerance under saline field conditions. Afr. J. Biotech. 10(20): 4086-4092.
26. **Ahmad, M., M. Rafiq, M. I. Arif and A. H. Syed. 2011.** Toxicity of some commonly used insecticides against *Coccinella undecimpunctata* (Coleoptera: Coccinellidae). Pak. J. Zool. 43(6): 1161-1165.
27. **Ahmad, Z. I., A. Saleem, M. Ansar, H. I. Javed and R. Saleem. 2011.** Improvement of mashbean production under rainfed conditions by *Rhizobium* inoculation and low rates of starter nitrogen. Pak. J. Agri. Res. (Accepted).

28. **Ahmedani, M. S., M. I. Haque, S. N. Afzal, M. Naeem, T. Hussain and S. Naz. 2011.** Quantitative losses and physical damage caused to wheat kernel (*Triticum aestivum* L.) by Khapra Beetle infestation. *Pak. J. Bot.* 43(1): 659-668.
29. **Akhter, S., B. A. Rakha, M. S. Ansari, S. M. H. Andrabi and N. Ullah. 2011.** Storage of Nili-Ravi buffalo (*Bubalus bubalis*) semen in skim milk extender supplemented with ascorbic acid and α -tocopherol. *Pak. J. Zool.* 43: 273-277.
30. **Akhter, S., B. A. Rakha, M. S. Ansari, S. M. H. Andrabi and N. Ullah. 2011.** Effect of glucose supplementation in skim milk diluter on motility, plasma membrane and acrosomal integrity of Nili-Ravi buffalo bull spermatozoa stored at 5°C. *Pak. J. Zool.* 43: 291-294.
31. **Akhter, S., F. M. Anjum, Z. U. Rehman, M. T. Sultan, M. Riaz and A. Ahmed. 2011.** Effect of Mineral fortification on plasma biochemical profile in rats. *Biol. Trace Element Res.* (Accepted DOI: 10.1007/s12011-011-8970-8).
32. **Akhter, S., M. S. Ansari, B. A. Rakha, S. M. H. Andrabi, N. Ullah and M. Khalid. 2011.** Effect of low density lipoprotein on freezability and fertility of buffalo (*Bubalus bubalis*) bull semen. *Theriogenology*, 76(4): 759-764.
33. **Akhter, S., M. S. Ansari, S. M. H. Andrabi, B. A. Rakha, N. Ullah and M. Khalid. 2011.** Soya-lecithin in extender improves the freezability and fertility of buffalo (*Bubalus Bubalis*) bull spermatozoa. *Reprod. Domest. Ani.* (Accepted).
34. **Akhter, S., M. S. Ansari, B. A. Rakha, N. Ullah, S. M. H. Andrabi and M. Khalid. 2011.** In vitro evaluation of liquid-stored buffalo semen at 5°C diluted in soya lecithin based extender (Bioxcell®), tris-citric egg yolk, skim milk and egg yolk-citrate extenders. *Reprod. Domestic Ani.* 46: 45-49.
35. **Akhter, S., M. S. Ansari and B. A. Rakha. 2011.** Effect of bovine serum albumin on motility, plasmalemma, viability and chromatin integrity of buffalo bull spermatozoa. *Romanian Biotechnological letters* (in press).
36. **Akram, Z., M. M. Khan, G. Shabbir and F. Nasir. 2011.** Assessment of genetic variability in different sorghum genotypes for drought tolerance based on their RAPD analysis. *J. Agri. Res.* (Accepted).
37. **Akram, Z., S. U. Ajmal, K. S. Khan, R. U. Qureshi and M. Zubair. 2011.** Combining ability estimates of some yield and quality related traits in spring wheat (*Triticum aestivum* L.). *Pak. J. Bot.* 43(1):221-231.
38. **Ali, B., M.S. Iqbal, M. K. N. Shah, G. Shabbir and N. M. Cheema. 2011.** Genetic analysis for various traits in *Gossypium hirsutum* L. *Pak. J. Agri. Res.* 24(1-4).
39. **Ali, S., T. Masud and K. S. Abbasi. 2011.** Physico-chemical characteristics of apricot (*Prunus armeniaca* L.) grown in Northern Areas of Pakistan. *Scientia Horticulturae*, 130: 386-392.
40. **Altaf, S and M. Aslam. 2011.** Bayesian analysis of the davidson model for paired comparison with order effect using noninformative priors. *Pak. J. Stat.* 27(2): 171-185.
41. **Anjum, N., S. Maqsood, T. Masud, A. Ahmad and A. Momin. 2011.** *Lactobacillus acidophilus*: Characterization of the species and application in food production. *Crit. Rev. Food Sci. and Nut.* (In Press).

42. **Ansari, M. S., B. A. Rakha and S. Akhter. 2011.** Effect of L-cysteine in extender on post-thaw quality of Sahiwal bull semen. *Animal Sci. Papers and Reports*, 29: 197-203.
43. **Ansari, M. S., B. A. Rakha, N. Ullah, S. M. H. Andrabi and S. Akhter. 2011.** Glutathione addition in tris-citric egg yolk extender improves the quality of cooled buffalo (*Bubalus bubalis*) bull semen. *Pak. J. Zool.* 43: 46-55.
44. **Ansari, M. S., B. A. Rakha, N. Ullah, S. M. H. Andrabi, M. Khalid and S. Akhter. 2011.** Effect of L-cysteine in tris-citric egg yolk extender on post thaw quality of Nili-Ravi buffalo (*Bubalus bubalis*) bull spermatozoa. *Pak. J. Zool.* 43: 41-47.
45. **Ansari, M. S., B. A. Rakha and S. Akhter. 2011.** Effect of butylated hydroxytoluene in extender on motility, plasmalemma and viability of Sahiwal Bull Spermatozoa. *Pak. J. Zool.* 43: 311-314.
46. **Ansari, M. S., B. A. Rakha, S. M. H. Andrabi and S. Akhter. 2011.** Effect of straw size and thawing time on quality of cryopreserved buffalo (*Bubalus bubalis*) semen. *Reproductive Biology*, 11: 49-55.
47. **Ansari, M. S., B. A. Rakha, S. M. H. Andrabi, N. Ullah, W. V. Holt and S. Akhter. 2011.** Glutathione supplementation in semen extender improves the freezability and in vivo fertility of buffalo (*Bubalus bubalis*) bull spermatozoa. *Theriogenology*, (in press).
48. **Ansari, M. S., B. A. Rakha, S. M. H. Andrabi, N. Ullah, W. V. Holt and S. Akhter. 2011.** Effect of cysteine addition in freezing extender on the progressive motility, viability, plasma membrane and DNA integrity of Nili-Ravi buffalo (*Bubalus bubalis*) bull spermatozoa. *Reproductive Biology*, (in press).
49. **Ansari, M. S., Q. U. Ain, S. A. Zaidi, S. Ali, S. Qadeer, B. A. Rakha, S. M. H. Andrabi and S. Akhter. 2011.** In Vitro longevity of Sahiwal bull spermatozoa at post-thawing. *Pak. Vet. J.* (in press).
50. **Anwar, M. B., M. S. Nadeem, A. R. Kayani and M. Qayyum. 2011.** Is Mammalian hair fiber analysis by optical fiber diameter analyzer helpful to identify prey from scats of carnivores? *Pak. J. Zool.* 43 (6):1218-1120.
51. **Anwar, M. B., R. Jackson, M. S. Nadeem, Jan. E. Janecka, S. Hussain, M. A. Baig, G. Muhammad and M. Qayyum. 2011.** Food habits of the snow leopard *panthera uncia* in baltistan, northern Pakistan. *Eur. J. Wildl. Res.* DOI 10.1007/s10344-011-0521-2.
52. **Anwar, Z., M. Gulfraz., M. Inam, M. J. Asad, A. I. Shafi, P. A. Shaiq, and R. U. Qureshi. 2011.** Optimization of dilute acid pretreatment using response surface methodology for bioethanol production from Cellulosic Biomass of rice polish. *Pak. J. Bot.* (Accepted).
53. **Arshadullah, M., M. Anwar, S. I. Hyder and M. Rasheed. 2011.** Screening of digitaria grass species in spring and monsoon seasons under rainfed conditions (Pakistan). *Sci. Tech. & Dev.* 30(2):6-11.
54. **Arshadullah, M., M. Rasheed, S. I. Hyder and M. Anwar. 2011.** Screening of panicum antidotale grass species under spring and Monsoon seasons in the mesic climate of Pothowar Plateau (Pakistan). *J. Ani. & Plant Sci.* 21(3):531-534.

55. **Arshadullah, M., M. Rasheed and S. A. R. Zaidi. 2011.** Salt tolerance of different rice cultivars for their salt tolerance under salt-affected soils Internat. Res.J. Agr. Sci.1(5):183-184.
56. **Arshadullah, M., M. Rasheed and S. A. R. Zaidi. 2011.** Influence of toxicity thresh hold levels of sodium chloride in rice (*Oryza sativa* L.). Agri. Sci. Res. J. 1(6):126-128.
57. **Arshadullah, M., M. A. Malik, M. Rasheed, G. Jilani, F. Zahoor and S. Kaleem. 2011.** Seasonal and genotypic variations influence the biomass and nutritional ingredients of *Cenchrus ciliaris* grass forage. Int. J. of Agri. & Biol. 13(1): 120-124.
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