Annual Quality Assurance Report

2009-10

Internal Quality Assurance Cell
College of Basic Sciences & Humanities
G.B. Pant University of Agriculture & Technology
Pantnagar 263 145 Uttarakhand

Annual Quality Assurance Report

2009-10

Internal Quality Assurance Cell
College of Basic Sciences & Humanities
G.B. Pant University of Agriculture & Technology
Pantnagar 263 145 Uttarakhand

Part A

Plan of action chalked out by the IQAC towards quality enhancement

- To update the curricula of the courses offered to students in various degree programmes with innovations in curricular design and transaction
- To cater the needs of the Inter-disciplinary and New programmes to be started by other departments, if any
- To ensure that reforms have been implemented in the examination as per guidelines given time-to-time by the Registrar
- Smooth running of SC/ST Cell for implementation of Government policies and roster as per guidelines and their Monitoring
- To emphasizing on capacity building, focus on Faculty Trainings and Competence Improvement
- Organizing national and international seminars, conferences, symposia and workshop as well as trainings to increase the potential in feasible skill development
- To monitor and maintain the deals recorded in MoUs, projects, and collaborative research
- To ensure the smooth running of extra classes for the students of SC/ST and weaker section
- Periodically reviews of the Internal Quality Assurance and finally in the end of the year
- Improvement as per Feedback from the students regarding the instruction imparted during each semester
- To update of the records related to complaints and redressal
- To ensure that college is a non-smoking and zero ragging zones.
- To strengthening of women empowerment cell.
- The construction of a new lecture complex in college premise to overcome the scarcity of classrooms.

Part B

Details in respect of the following:

1. Activities reflecting the goals and objectives of the institution:

The Mandates:

- Spreading scientific awareness among farmers and public in order to enhance productivity and efficiency.
- Providing latest scientific knowledge for socio-economic development and capacity-building.

The above mandates were established during the inception of the college, which have now been revised in the present scenario.

- Basic supporting courses to U.G. /P.G. Programmes of the university besides M. Sc. & Ph. D. programmes in pure & applied sciences.
- Research in frontline areas of basic & applied sciences with relevance to agriculture, allied sciences and engineering.
- Focused study of biodiversity, bio-resources, biotechnology and environment.
- Spreading scientific awareness among farmers and public.

The Mission:

- Inculcating scientific temperament among the students for progress of nation.
- Teaching and research in basic and applied sciences.
- To teach Basic courses at the UG and PG Programmes level to the students of different faculties and specializations besides M. Sc. & Ph. D. programmes in pure & applied sciences.
- Research in frontline areas of basic & applied sciences with relevance to agriculture, allied sciences and engineering ushering state-of-art techniques and technologies.

Goals and Objectives:

The knowledge gained from the basic research has to be used in the development of modern technologies so as to intensify the utilization of ever declining natural resources. Perfecting gene transfer, biological approaches to gene mapping, multiplication of elite species and varieties through biotechnological means, production of transgenic plants, biochemical and physiological basis for disease resistance and quality of food grains, dynamics of soil-water-plant interaction and crop modeling are some of the issues to be taken-up in the near future. The role of biotechnology, post-harvest management to increase shelf-life of perishable and non-perishable foods, recycling of waste, role of enzymes in food industry, tissue culture and pollen culture are some other important areas which need continuous attention of the basic science research. Some other important research strategies in basic sciences are presented below:

- Studies on application of molecular biological approaches for genome mapping for marker-assisted selection of various crops, in vitro DNA manipulation for specific purposes of expression and transfer of genes in diverse biological system will be

taken up. Modified gene constructs will be introduced into microbial and plant cell by transformation. Application of regulators to legume rhizosphere growth, biochemical aspects of host-pathogen relationship, screening of nutritive quality in agricultural crops, pesticidal hazard on pollinators, application of new compounds and their metal complexes for antibacterial, anti fungal, nematicidal and insecticidal properties, characterization of germplasm, molecular cytogenesis and genetic engineering, bio-safety concerns against transgenics, development of biofuels, and formulation of medicinal plant products against specific diseases like diabetes and parkinson's are the new thrust areas of basic research.

- Development of better strains of nitrogen-fixing organisms including symbiotic, asymbiotic and associative symbiotic microorganisms, development of diazotrophic strains able to perform well under adverse environmental conditions, microbial production of industrially useful products from agricultural raw materials, and the potential of micro-organisms for production of industrial enzymes, microbial polysaccharides and organic acids will be harnessed. Microbial processes for treatment of various types of industrial wastes will be attempted for pollution abatement and energy recovery.
- Emphasis will be laid on the study of physiology of abiotic stresses for identifying physiological, biochemical and molecular traits in crop plants which could be selected and cultivated under stress conditions. The work on nodulation and nitrogen fixation will be carried out in order to evolve biological means of providing nitrogen to crop plants by enhancing the active span of nodules.
- Physiological traits dealing with increased crop production, better nutrient, carbon and nitrogen-use efficiency and post-harvest physiology and natural plant resources are other areas which will require emphasis. Molecular mechanism of stress-induced male sterility in cereals, pollen biotechnology and propagation of various plants of medicinal use will be other important areas for priority action.

Future Goals and Objectives:

- To train the students with high throughput techniques applicable in the area of agri-biotechnology and other bio-services, such as bio-energy, bio-fertilizer, bio-control etc.
- Conducting socio-economic and environmental impact assessment
- To enable students by imparting latest scientific notions and techniques
- Focused study of biodiversity, bio-resources, biotechnology and environment.

Short and long term plans for five years

Long term plan involves hi-tech research in applied sciences among others. Short term plan incorporates refinement of existing tool and techniques in addition to infrastructural development. Some of the specific areas of development are as follows:

- Perfecting gene transfer, biological approaches to gene mapping, multiplication of elite species and varieties through biotechnological means, production of transgenic plants, biochemical and physiological basis for disease resistance and quality of food

grain, dynamics of soil-water-plant interaction and crop modeling, post harvest management to increase shelf-life of perishable and non-perishable foods, recycling of waste, role of enzymes in food industry and tissue culture.

- More stress on physiology of abiotic stresses for identifying physiological, biochemical and molecular traits in crop plants cultivated under stress conditions.
- Work on nodulation and nitrogen fixation to evolve biological means of providing nitrogen to crop plants by enhancing the active span of nodules.
- Emphasis on physiological traits related to increased crop production, better nutrient, carbon and nitrogen use efficiency and post-harvest physiology, natural plant resources.
- Molecular mechanism of stress induced male sterility in cereals, pollen biotechnology and propagation of various plants of medical use especially nutraceuticals and pharmaceuticals.
- Studies on application of molecular biological approaches for genome mapping for marker assisted selection of various crops, in vitro DNA manipulation for specific purposes of expression and transfer of genes in diverse biological systems.
- Emphasis on commercial utilization of bio-technological techniques especially in mass multiplication of elite species.
- Application of regulators to legumes rhizosphere, growth biochemical aspects of host-pathogen relationship, screening of nutritive quality in agricultural crops, pesticidal hazard on pollinators, application of new compounds and their metal complexes for antibacterial, antifungal, nematicidal and insecticidal characterization of germplasm, molecular cytogenetics and genetic engineering.
- Increased use of bio-physical, radioisotopes and nuclear techniques to ensure major breakthrough in agriculture and allied sectors.
- Development of better strains of nitrogen fixing organisms including asymbiotic, symbiotic and associative symbiotic micro organisms, besides diazotrophic strains able to perform well under adverse environmental conditions.
- Realising the importance of rhizosphere biology in influenc on the crop growth, research efforts on the biotic and abiotic interactions in rhizosphere and generating the technology better suited for sustainable agriculture.
- Developing a network of interdisciplinary approach to resolve different facets of rhizosphere research.
- Development/identifying the crop gene pool which could be more productive under different challenged situation using integrated crop management practices.
- Microbial production of industrially useful products from agricultural raw materials.
- Harnessing potential of microorganisms for production of industrial enzymes, microbial polysaccharides and organic acids.
- Initiating microbial processes for treatment of various types of industrial wastes for pollution abatement and energy recovery.
- Emphasis will be laid on application of tools and techniques developed in agriculture, biological and environmental science.
- Evolving strategies to secure adoption of organic and precision farming viably.

- Strategy in social science research towards generation of information and socio-economic impacts of innovative technologies, cost-benefit ratio of the farming systems, employment scenario, structural and related issues.
- Research emphasis on areas related to unemployment, poverty, illiteracy, environmental factors, health problems, rural migration, tribal marginalization, old age, changes in cropping pattern and land relations.

2. New academic programmes initiated (UG and PG)

Undergraduate Programmes:

Nil

Post-graduate Programmes:

Nil

3. Innovations in curricular design and transaction

- Earn while learn programme implemented at UG level
- Concept of liberal education introduced
- National Service Scheme started at undergraduate level
- Graduate Research/Teaching assistantship at Master's level
- Scholarship to all Ph.D. students even not qualifying NET
- Six new courses designed by Department of Environmental Science and 1 course modified as BPP 197 Engineering Physics by Department of Physics.
- The courses were reviewed and updated by each department.

4. Inter-disciplinary and New programmes started

Undergraduate Programmes:

Nil

Post-graduate Programmes:

Nil

5. Examination reforms implemented

- Computerization of online registration for auditing the courses
- At least two pre-finals examinations are essential for each course
- 85% of the attendance are mandatory in each course for final examination
- Measures are being adhere strictly to fulfill the criteria for make in the examination
- Result of each course-examination is submitted online and ensured at each level of administration
- At 10-point scale has been adopted in each course
- The academic calendar including examination dates for both semesters is approved by Academic Council in the beginning of the session

- The cell ensures the implementation of examination reforms issued by the office of the Registrar time to time.

6. Candidate qualified: NET/SLET/GATE etc.

- **In Microbiology:** ICAR SRF (May 2009) Sahbaz Anwar 36989 and Mr. Sachin Kumar Vaidh 35624 Ph.D. student; GATE(April 2009) Mr. Digar Singh 35325 M.Sc.
- **In MBGE:** CSIR-JRF: 07; CSIR-NET: 02; GATE: 03
- **In Biochemistry:** NET qualified CSIR/UGC (2009-2010):4 M.Sc. Students, NET-ASRB qualified (2009-2010): 5 Ph.D. students, GATE-qualified(2009-10):8 students [Priyanka Mathpal 35329, Shailesh Kr. 36775, Sanjay Pandey 36766, Nand Kishor 36772, Deepak Chand 36826, Neetu Pathak 36197, Shivangi Chamoli 35337, Santanu Mandal 37104]
- **In Physics:** Raghuvesh Kumar qualified UGC-CSIR NET (June 2009)
- **In Plant Physiology:** Ashish Sharma 34138 (2009-10) ARS Net, Babita Patna 34096 ICAR SRF, Ajay Kumar Panda 37086 CSIR Net

7. Initiative towards faculty development programmes

To maintain capacity building and development, the faculty is being upgraded by their trainings and workshops. The staff is allowed to attend such development programmes organized at college-level as well as University level. The college also facilitates the faculty to depute them for attending National and International conferences and symposia etc. Besides all this the faculty also delivered a number of lectures invited in various programmes including research and other academic fields. They publish Bulletins and Lab-manuals in various schemes and courses. College also organizes talks and lectures besides faculty seminars by eminent scientists and researchers of the country as well as of international repute. A list faculty members who participated in such initiatives is given in **Annexure-I.**

8. Total number of Seminars/Workshops conducted

- Organization of **4th Uttarakhand State Science & Technology Congress** in the Golden Jubilee Year on "Promotion and adoption of rural technologies in the state" under global theme of "Heal, fuel, feed the world" held at Pantnagar, November 10-12, 2009. Funded by Uttarakhand Council of Science & Technology, Dehradun, State Biotechnology Programme, Haldi, U-SERC, Dehradun and DST, New Delhi; it was jointly organized by CBSH (Dr Anil Kumar as Organizing Secretary) and UCOST, Dehradun. Her Excellency Smt. Margaret Alva, Governor of Uttarakhand inaugurated the Congress. She emphasized the need of second green revolution by using modern scientific tools and technologies of agricultural sciences, biotechnological approaches and nanotechnology for raising the social and economic status of the state and the country. Dr. B.S. Bisht, Vice Chancellor and Patron of the Congress delivered the welcome address followed by Dr. Rajendra Dobhal, Director, UCOST giving a brief account.

Three eminent scientists Dr. S.K. Joshi, Ex Director General CSIR, Dr. A.N. Purohit, Ex Director, High Altitude Plant Physiology Research Centre, Srinagar, Garhwal and Dr. A.N. Mukhopadhyay, Ex-Vice Chancellor, Assam Agricultural University Jorhat were conferred Life Time Achievement award of UCOST. About 700 delegates from different parts of Uttatakhand and adjoining states attended. A total of six hundred sixty six papers were selected for presentation. The presentations were made in 15 different sessions organized in different colleges of the university. Apart from these four Brain storming sessions were organized on "Partnership in Biotech Research: From Bio-resources to Wealth", "Rural Empowerment through Information and Communication Technology (ICT)", "Good laboratory practices in science and technology" and "Agro-technology and Intellectual Property Rights".

- **International Workshop** on "Rhizosphere Biology of Agriculture, Horticulture and Forestry: Present and Future" by Dept of Biological Sc. (Dr. Anil Kumar Sharma, Associate Director as Organizing Secretary), CBSH, GBPUA&T, Pantnagar on 25-27 February, 2010. The number of national and foreign delegates was 150 who deliberated in four different sessions. Out of 25 resource speakers, 15 were foreigners.

- **Regional Seminar** on Intellectual Property & Innovation Management in Knowledge Era by Dept of Physics (Dr. K. P. Singh, Assoc. Professor of Bio-Physics as Organizing Secretary) organized by National Research Development Corporation and sponsored by UCOST on 16th March, 2010 at CBS&H.

- **Training workshop** on Bioinformatics "Biological Sequence Analysis and Applications in Agriculture & Veterinary" by Dept of MBGE, September 2-4, 2009.

- **Summer Training Course** of 45 days for 31 students of B.Tech (Biotechnology), B.Sc. and M.Sc. from other institutions of state and neighboring states by Department of Molecular Biology and Genetic Engineering, 1 June-15 July 2009.

- **Summer Training** for 14 students of MTech Biotechnology from G B Pant Engineering College, Pauri by Dept of Department of Molecular Biology and Genetic Engineering, 11-25 June 2009.

- **Winter Training** of 45-days for 6 students for the undergraduate and postgraduate students organized by Department of Molecular Biology and Genetic Engineering, January 1st -15th February 2010

9. Research Projects

a. Ongoing

S. No.	Title of Project	PI/ Co PI	Funding Agency	Duration	Outlay (lac)
1.	Application of Microorganisms in Agriculture and Allied Sectors	Reeta Goel	NBAIM/ ICAR	2007-12	67.57
2.	*In silico* Characterization of cadmium and arsenic resistance potential genes and/ or proteins of microbial system	Reeta Goel	DBT	2008-11	21.49
3.	Fermentation of Apple-pomace forproduction of ethanol- acid	Manvika Sahgal	ICAR	AICRP Continued	0.50 per yr
4.	Sub-center of bacteria & archaea	Manvika Sahgal	MoEF	2005-Continued	25.47
5.	All India Coordinated Research Project on Weed Control	Shishir Tandon and S.K. Guru	ICAR	Long Term 1999-contd	
6.	Super Critical Carbondioxide Assisted Synthesis of Carbon Nanotube Epoxy Composites	M. G. H. Zaidi	DRDO Govt. of India	2008-11	39.89
7.	Processing of Antimicrobial Nanocomposites in Supercritical Carbon Dioxide	M. G. H. Zaidi	DBT Govt. of India	2008-11	36.07

8.	Processing of thermoresponsive magnetic nanoparticle in super critical carbon dioxide	M. G. H. Zaidi	UGC Govt. of India	2008-11	7.831
9.	Elucidation of biochemical mechanism(s) of fungal growth promotory substance(s) from wheat spikes for Karnal bunt (Tilletia indica) pathogen	Anil Kumar	DST project	2008 onwards	25.0
10.	Chemical & molecular determinants of Aconitum balfourii Stapf. and ecoprofiling under micro/macro environment of root growth including transgenic roots for higher aconite content.	A.K. Gaur A. K. Pant	NMPB	2008-11	35.0
11.	Program Mode Support in Agriculture Biotechnology, Pantnagar	J. Kumar, Anil Kumar, A.K Gaur, S. Arora, Gohar Taj, D. Pandey	Dept of Biotechnology, GOI	2008-12	761.00
12.	Carbon Sequestration Studies and Capacity Building in Agricultural System of Central Himalayan Region of India	Uma Melkania	UCOST Dehradun	2008-11	
13.	Carbon Sequestration Studies in Forest and Agroecosystems along an altitudinal gradient.	Uma Melkania	DST, New Delhi	2009-12	
14.	Environmental Impacts Assessment Study of SIDCUL Integrated Industrial Estate-Pantnagar	R. K Srivastava	UCOST, Dehradun	2007-12	
15.	Monitoring of pesticide residues in samples of some vegetable and their biological degradation in soils.	Anjana Srivastava	UCOST	2009- 11	10.00
16.	Novel Antioxidants from plants of family lamiaceae growing in Uttarkhand region: Search for New Nutraceuticals.	Om Prakash	UCOST	2009- 2011	5.67
17.	Synthesis of CNT integrated epoxy composites in supercritical carbon dioxide	M. G. H. Zaidi	DRDO	2009- 12	19.98
18.	Delineating the molecular mechanisms associated with plant growth promontory effect of nano-particles on Brassica juncea	Sandeep Arora	DST	2009-12	
19.	Understanding the mechanism of variation in status of a few nutritionally important micronutrients in some important food crops and the mechanism of micronutrient enrichment in plant parts	S.C. Shankhdhar	ICAR (NAIP)	2009 onwards	55.00
20.	Cloning and characterization of thermo-stable beta-glucosidase gene(s) from bacterial isolate for future production of substrate specific glucose tolerant engineered enzyme	Ashok Kr. Verma	Department of Biotechnology, Govt. of India.	2009-12	10.65

21.	All India Coordinate Research Rice Improvement Programme	Dr. Alok Shukla	Deptt of Plant Physiology	2001-Continued	

b. Completed

S. No.	Title of Project	PI/ Co PI	Funding Agency	Duration	Outlay (lac)
1.	Pesticide degradation using cultural and biological tools to minimize ground water pollution	Anjana Srivastava	Ministry of Env., Govt. of India	2007-10	18.41
2.	Isolation Identification and Synthesis of pheromones of Groundnut Bruchid, Caryedon serratus	Virendra Kumar	DBT Govt. of India	2007-10	9.92
3.	Demonstration of Municipal waste Management through application of fuel wood plantation sponsored by IIT, Delhi. Under V. K. International project.	R.K. Srivastava	IIT,Delhi	2008-10	

10. Patents generated, if any

Dr. Anil Kumar Sharma, Assoc. Professor, Biological Science has got a new fungus patented (Patent no. 237946 dated: 14.01.2010). Research on many crops such as wheat, tomato, chilli, marigold, onion, brinjal etc. has shown its potential of promoting 60-70% growth of plant. It can be grown in synthetic medium for easier propagation. This is effective in enhancing nutrition of plants of many crops besides being resistant against certain pathogens.

11. New collaborative research programme

The University runs all the academic programmes through Advisor-advisee system. Every student is allotted an advisor at the time of admission. A course programme of each student is approved by Dean of the college. The course programme may be different for different students. There is provision of the basic supporting courses as well minor package besides the optional courses at Masters and Ph D levels. At the Post-graduation level, there is an advisory committee consisting of the members, who are expert in the field of the research and related topics. The research is done by each student in the supervision of experts, who are normally faculty of other departments in the University. Thus, there is bridge over various colleges, departments and faculties to research in the projects too. As an example, the committee would like to quote proudly that the department of Molecular Biology and Genetic Engineering is running a mega research Program in Mode Support in Agriculture Biotechnology, Pantnagar. Thus, the concept of collaborative research programme is being run through project mode.

12. Research grants received form various agencies

The college runs various research projects with collaboration with various departments with administrative control under Directorate of Experiment Station and financial control through the Comptroller of the University. The grants received in various research projects as a total outlay have been shown above along with projects.

13. Details of Research scholars

The list of research scholars working in various departments of the college is given in the **Annexure-II.**

14. Citation index of faculty members and impact factor

The citation index of the faculty members and impact factor of publication for individual faculty member of the college are given in the **Annexure-III**.

15. Honors / Awards to the faculty

International

Nil

National

- **Dinesh Pandey,** Assistant Professor, MBGE conferred Young Scientist Award under the discipline of Biotechnology, Biochemistry and Microbiology by 4th Uttarakhand Sate Science & Technology Congress held at G B P U A & T, Pantnagar on 10-12th Nov. 2009
- **Uma Melkania**, Professor & Head, Env. Sc. nominated as advisory board member of Uttarakhand Centre on Climate Change in March 2010 by the Vice-chancellor, Kumaun University, Nainital.
- **Uma Melkania** as Councilor Central Himalayan Environment Association, for a period of three years from 1 October 2009 to 30 September 2012.
- **Uma Melkania** nominated as a member of Research Advisory Committee in Forestry, Kumaun University, Nainital
- **Om Prakash**, Asstt. Prof., Chemistry was awarded UGC Post Doctoral Fellowship in 2009
- **Shishir Tandon**, JRO, Chemistry doing research in AICRP-WC was awarded Best Annual report 2009-10 at IGKV, Raipur

16. Internal resources generated

- There is a provision of the 15% money in each project for over head charges to run as University share. From this share, university transfers 40% to college where the project is running actually. This increases the internal resources through projects
- A new programme B Tech Biotech has been started in self-finance mode. Programme fee received from the students is retained in the college to increase the internal resources through teaching
- Summer trainings are being organized to outsiders by various departments of the college to increase the internal resources.

17. Details of departments getting SAP / COSIST (ASSIST) /DST (FIST etc)

The College does not have any Special Assistance Programme and other COSIST supported by UGC. One to two Departments have received the funds under FIST from Department of Science & Technology. Following Departments awarded Funds for Infrastructure in Science & Technology (FIST):

- Department of Microbiology
- Department of Chemistry
- Department of Environment Sciences
- Department of Biochemistry

18. Community services

Ample opportunities are available to the students to express their creative urge through literary, social and cultural activities and films; hobbies clubs; and NCC at hostel and University levels. There are 4 activity and 10 hobby clubs. Photography project, vegetable production project, literary and cultural project, Indian heritage and spiritual thought project, Indian and foreign languages project, arts and craft project, computer learning project, community development project, fashion/ dress designing project and tractor driving project also help in developing finer aspects of students' personality.

19. Teachers and Officer newly recruited

a. Teachers

Nil

b. Officers

Nil

20. Teaching - Non-teaching staff ratio

1:2

21. Improvement in the Library services

There is a concept of central library in the University. Besides developing its need based collections of printed texts, the library kept pace with IT oriented ways and means of dissemination scientific information. Its beautifully renovated and air conditioned documentation division is equipped with CD Network station, several CD based database, over a dozen personal computers and heavy duty printer for generating printouts of scientific literature required by students and faculty members Libsys software package is acquired recently to computerize in-house activities like issuance of books, production of catalogue cards, management of periodical subscription and acquisition of scientific and technical literature. Library is also using internet facility for optimistic exploitation of networked resources for advancement of learning.

Library service Committee is an apex body to advise the Librarian on policy matters pertaining to library, its development, improvement in its services and funding resources etc. Dean and Head of the Departments of College of Basic Sciences & Humanities are members.

Following Improvement has been observed:

1. The University Library has received special grant of Rs 400.40 lac under institute of excellence from ICAR. In this project 11 Krishi Vigyan Kendra, and 10 Research Stations were provided computers, printer, scanner, UPS and anti software packages in order to run digital library services at these places.

2. Improvement of infrastructure like implementation of wireless technology, CCTV, fire proofing of server room, up-gradation of servers, desktops etc are in progress under institute of excellence grant from ICAR

3. The search facility of bibliographical databases available on CD-Rom like, CABI, BIOSIS, AGRIS and COMPONDEX etc. are provided to the users for their literature search.

4. Online journals access facilities of Springer, Annual Reviews, CSIRO through Consortium for e- Resources in Agriculture (CeRA) and IEEE, ASME, ASCE through INDEST have been provided to the users.

5. Information services from J-Gate and union catalogue of DELNET are provided to users.

6. e-Thesis submitted by students in Ph.D. and Master Degree programs is managed through digital repository.

7. Library is providing information service of Indian standards in full text on electronic mode.

8. Users were trained to use the digital resources for extracting information from bibliographical databases, full text journals and other e-resources.

9. Bibliographical records of library documents are computerized and are available on web under 'OPAC' which are linked with the home page of the library.

22. New books/ Journals subscribed and their cost

	Total Collection:	389427
1.	Number of users consulted the library:	30214
2.	Number of publications consulted:	390717
	a. Books:	180342
	b. Current periodicals:	73250
	c. Bound volumes of periodicals:	137125
3.	Number of publications issued:	53826
4.	Number of publications classified:	4347
5.	Number of publications catalogued:	
	a. New titles:	4454
	b. Add copies:	4907

c. Catalogue cards prepared: 50

6. Number of bibliographical references CD-ROM databases printouts: 35000

7. Number of documents procured: 2218

8. Number of periodicals procured 450

23. Courses in which student assessment of teachers is introduced and the action taken on student feedback

The College of Basic Sciences & Humanities consists of ten departments. Out of them, nine departments are running Masters and Ph D programmes in their respective disciplines. The department of Molecular Biology & genetic Engineering has started a 4-year Under-graduate programme in B Tech Bio-technology and other departments of the college and other colleges are supporting in coordination.

All the departments of the college offer the courses to run all under-graduate and post-graduate programmes of the University. In the end of every semester, a feedback form is given in the each course by a committee constituted for this purpose with notice of the instructor. The feedback is analyzed by the Department of Mathematics, Statistics and Computer Science confidentially. Finally, Dean of the college approaches to instructor concerned on the basis of the analysis not on raw feedback form. Thus, process of improvement of finalized.

24. Feedback from stakeholders

The stakeholders of the college are students. The students study in Advisor-advisee system. When their degree is completed, i.e., in the end of semester, the advisor gets feedback. If any improvement is required, the matter is brought in the notice of the Dean and finally for open discussion to Board of Faculty for its proper approval. However, it would be worth while to mention that being imparting higher education in professional degree courses, there is no and fix feedback.

25. Unit cost of Education

The college of Basic Sciences & Humanities is a constituent college of the University. The teaching, research and extension are the integral part as mandate. Being residential and on the basis of land grant pattern University, there is no concept of income and expenditure for teaching separately. Therefore, unit cost of education can not be calculated as such. It would be worth while to mention that fiscal fitness is maintained as per state government rules and regulations by a separate division, which is headed by state government finance officer.

26. Computerization of administration and the process or admissions and examination results, issue of certificates

Admission criteria and entrance examination

1. Admission to the university implies acceptance without any modification by the candidate and his/her parents/guardians of all provisions given in the university act,

statutes, regulations and admission policy and changes that are made from time to time therein.

2. The students who have been temporarily dismissed or permanently dropped from the university either on account of poor academic performance or on account of acts of indiscipline or those who have been debarred from seeking admission to any programme of this university are not entitled to seek admission in the university.
3. If any document submitted by the candidate is found to be false at any stage during his/her stay in the university, his/her admission will be cancelled.
4. The information indicated in the prospectus published every year, are only for general guidance and could be modified/changed from time to time by the board of management/ academic council of the university.
5. All admissions shall be made strictly on merit as determined on the basis of marks obtained by the candidates in the Entrance Examination to be conducted by University, except the following:
   (a) Admissions to B.Tech. Programmes shall be made by the University on the basis of merit of AIEEE Examination.
   (b) Admissions to Master's programme in Molecular Biology and Biotechnology offered by College of Basic Sciences & Humanities shall be made through the entrance examination conducted by J.N.U., New Delhi.
   (c) Candidates other than Bonafide residents of Uttarakhand are not eligible to seek admission directly to the Undergraduate and Masters' degree programmes in the University. However, they can apply to the Indian Council of Agricultural Research, New Delhi/Veterinary Council of India, New Delhi. They will have to submit a separate application as and when called by ICAR/VCI, New Delhi and take All India Competitive Examinations and attend counseling at New Delhi for seat allotment.

Time of Admission

Admissions to all Under-graduate and Masters' degree programmes except for Sponsored or Fellowship holders in various postgraduate degree programmes shall be made in the I Semester of the ensuing academic year only. However, admissions to Ph.D. degree programmes shall be made in first as well as in second semester (provided seats remain vacant in the first semester).

Application procedure

The application form and Prospectus for admission to a degree programme can be obtained by post from the Coordinator Admissions GBPUA& T, Pantnagar by sending a crossed bank draft along with a request accompanied by 30 x 25 cm size self-addressed stamped envelope bearing postage stamps by Ordinary or Registered Post or on cash payment at the Designated Post Offices in various districts of the state as well as Lucknow GPO and New Delhi GPO. The candidates appearing in the qualifying examination can also apply provided that they must produce original mark-sheet of final year indicating class/division obtained at time of counseling failing which their candidature will not be considered for counseling.

Examination fee & last date for submission of application

(a) The Last date for sale of application form and Prospectus at Post Offices and at Admission Cell, submission of completed application forms along with examination fee are published every year through News papers and university website www.gbpuat.ac.in.

(b) The candidate seeking admission to MCA programme is required to fill separate application form along with application fee.

Admission of Sponsored/ Nominated Candidates

(a) The candidate(s) sponsored/nominated by the I.C.A.R./ Govt. of India / State Govt./ Indian Universities shall not be required to appear in the Entrance Examination. His/ her admission shall be governed by the eligibility requirements, as prescribed in the admission brochure**.**

(b) The last date for the receipt of application of the sponsored candidate(s) and UGC/ ICAR/ CSIR/ DBT fellowship holders shall be one month before the beginning of the Semester/ Session in which admission is sought.

No. of Seats & Eligibility Qualification

The eligibility and qualification for each programme is separately given in the Admission Brochure. The numbers of seats may be changed every year as per need and available diversified resources.

Reservations

(a) Vertical Reservations

(i) The vertical reservation for the academic year will be as under:

(i) OBC - 14%
(ii) Scheduled Caste - 19%
(iii) Scheduled Tribes - 04%

(ii) The seats not filled through candidates of reserved categories shall be converted to General Category seats and filled up accordingly. The conversion of seats in Ph.D. programmes only shall be made during the counseling in the II Semester upon vacancy.

(b) Horizontal Reservations: Out of reservation applicable to different categories, the horizontal reservation in these categories shall be as under:

(i)	Children of retired/killed or disabled Defence Personnel of Uttarakhand	2 %
(ii)	Children of Freedom Fighters of Uttarakhand	2 %
(iii)	Physically Handicapped of Uttarakhand having disability 40% or above	3 %
(iv)	*Women Candidates of Uttarakhand	30 %

* Women Candidates of Uttarakhand shall include girl candidates also.

(c) The candidates who have obtained qualifying degree from G.B.P.U.A. & T., Pantnagar shall be treated at par with the Bonafide residents of Uttarakhand for higher studies.

(d) Over and above the sanctioned seats, admission to the following sub-categories in Undergraduate programmes (except B. Tech.) shall be available as follows:

i. Children/ Spouse of regular employees of G.B.P.U.A.&T., Pantnagar
5% seats in each programme

ii. ICAR Nominee
10% for Foreign Nationals who pay an Institutional Fee US$ 4000 per annum besides other fee.

iii. The son/ daughter/ spouse of the regular University employee who died in harness and whose establishment was with the G. B. Pant University shall be given special consideration for admission in the first-degree programme on compassionate grounds. His/ her admission will be subject to that:

- He/ She secures at least marks up to cutoff point for admissions of the particular year and qualifies in General Category,
- He/ She fulfills the minimum eligibility qualification for the programme, and
- 2% of the sanctioned seats in each programme subject to a minimum of one seat in each programme purely based on merit rank in the entrance examination.
- His/Her admission is approved by the Vice-Chancellor.

iv One seat each in every UG Programme (except B.Tech. programmes) shall be reserved for the wards of Kashmiri migrants and wards of J & K residents. The Candidates shall be admitted based on merit subject to qualifying the entrance examination in respective categories subject to fulfilling the conditions laid down in Brochure.

Note: (i) The University reserve the right to change the reservation pattern either on account of Govt. orders or on its own.

Mode of Admission

(a) Subjects & Scheme of Examination

(i) All candidates seeking admission to Ph.D. Programmes shall take subject matter test comprising 600 marks, which shall be administered programme wise.

(ii) All candidates seeking admission to Masters' programmes shall take (i) Aptitude Test and (ii) Subject Matter Test as per scheme and mode.

(iii) There shall be one common Entrance Examination for admission to all Undergraduate Programmes. It shall be of three hours duration and shall consist of one question paper and would be of objective type with multiple choices. The bilingual question paper in English and Hindi will be supplied.

(b) Basis of Selection for Admission

(i) The Admissions Committee will decide the cutoff marks for qualifying the entrance examination after declaration of results of the Entrance Examination conducted by the University.

(ii) For Ph.D. Programmes if the marks secured by two or more candidates are the same, the merit shall be decided on the basis of marks secured in the qualifying examination. For Masters' programmes in the event of two or more candidates securing equal marks the merit shall be decided on the basis of marks secured in the Aptitude Test and then qualifying examination. For Undergraduate programmes in the event of two or more candidates securing equal marks, the merit shall be decided on the basis of marks secured in Mental Agility then Physics, Chemistry and thereafter in the qualifying examination. In the event of tie again, a candidate with higher in age would be rated higher in merit.

(c) Counseling

(i) All the qualified candidates, as per merit, shall be called for counseling on a specified date and time for consideration for admission to various Undergraduate, Masters' and Ph.D. programmes. The counseling will continue till the last seat in each programme is filled-up. The candidate will be informed by registered post at his/her mailing address given on the self-addressed envelope provided by the candidate. The University will not be responsible for non-delivery/late delivery of letter.

(ii) No letter, fax or telegram enquiring about the result of the Entrance Examination will be entertained.

(iii) The candidates will have to report at the counseling place as per schedule given in counseling letter for checking of relevant documents and depositing prescribed fee. Those candidates who do not turn up at their call will be given a chance at the end of the day. They can claim only the programmes/majors in which seats are available at that time and as per their qualifications/groups.

(iv) The candidates coming for personal appearance should bring along with them the required documents for checking and depositing before counseling, such as, attested photocopies of High School Certificate and Marks-sheet, Intermediate Certificate and Marks-sheet and Certificate of any other higher degree qualifications that he/she may possess along with the originals; Domicile Certificate of Uttarakhand State Rural/Sports/Agriculturists weightage Certificate, Character and Conduct Certificate in original from the Head of the Institution last attended. Five-passport size photographs and other relevant documents.

Academic regulations

The Academic Council of the University frames appropriate academic regulations after the respective Boards of Faculties have deliberated and recommended the same. The academic regulations are compiled by the Registrar's office and updated from time to time incorporating the amendments. The Academic Council can also take up issues for discussion on its own and frame regulations.

The academic regulations pertain to the conduct of meetings of the Board of Management and Academic Council, admission, enrolment and continuance and discontinuance of students, conduct of examinations, award of degrees, and courses of study for degrees and diplomas, award of merit scholarship, award of bursaries, graduate assistantships, tuition free ship, award of fellowship/ scholarship by outside agencies, award of sports scholarship, award of medals (gold, silver and bronze), issuance of documents to the students, and merit certificates, convocation, award of degree in absentia, maintenance of students records and constitution of committees on student discipline, education policy and Library.

Curricula development and revision process

The University established in the year 1960 adopted the trimester system of education. Since then it organized the course-curricula for different UG and PG programmes to suit the requirements of its education. The University changed over to the semester system of education in 1985-86 and the course curricula were modified /updated accordingly.

The University statutes provide for the constitution of a Board in each faculty. The Board of Faculty is represented by the Heads of Departments and faculty members. Each Board acting as a recommendatory body develops department-wise course curricula to meet the degree requirements.

The curriculum developed by each faculty is placed before the Academic Council the highest policy making body, for approval.

Graduation requirements and curricula

The Academic Council is the apex body of the University which is charged with the responsibility of approving graduation (course) requirements of undergraduate students being admitted to the University. Any change/ modification/ addition/ deletion of course(s) from the graduation requirements of students is authorized only by the Academic Council. A new programme of undergraduate and post-graduate study is approved only after the needs objectives of the programme and courses and course contents are critically examined by the concerned faculty and the Academic Council. The contents of courses are developed in respect of lecture schedule, theory and practical distribution of contact hours, credit load and text and reference books by the concerned Department(s) in the light of the recommendation of ICAR, VCI, UGC and AICTE. The catalogue of the course(s) is updated periodically to impart basic applied and real time information to the students.

Adoption of standard model curricula

The University is sensitive to the quality of its products i.e. the students. Regular and meticulous monitoring of the academic programmes to ensure effective delivery is the unique feature of the University. Utmost care is taken to revise the curricula for the inclusion of new knowledge and exclusion of obsolete information. The recommendations of the central agencies incorporated. Some of the faculties have introduced the concept of pedagogy/Teaching Coordination Committees, which ensure effective implementation of educational policies, meticulous monitoring of teaching programmes and redressal of teaching related problems. The responsibilities of the Committees are:

- To ensure coordination of the teaching programmes
- To prepare the schedule for pre-final examinations
- To address the difficulties and ensure smooth conduct of teaching schedule
- To ensure coordination among the teachers and departments involved in teaching
- To ensure timely distribution of the answer books of the pre-final examinations to the students and removal of their difficulties

Evaluation and grading

The policy of the periodic evaluation of student's academic performance throughout the semester has been adopted by the University since 1960. It aims at monitoring the academic achievements of students. The details of evaluation and grading are given below:

- **Undergraduate degree programme**

The examinations are conducted internally in all the B.Tech. and B.Sc. Horticulture programmes in both the semesters. In the College of Veterinary and Animal Sciences, College of Home Science, College of Agriculture and College of Fisheries, the evaluation has an external component (50% of marks are allotted for the external examination).

The examinations in internal system are of the following types:

i. Pre-final examination
   a) Hourly examination (2) 40%
   b) Practical examination 20%
   ii. Semester final examination 40%

The examinations in external system are:

i. Pre-final examination
   a) Hourly examination (2) 15%
   b) Practical examination 20%

ii. Semester final examination 50%

At least two pre-final examinations are held in each course. The first pre-final examination is held during the 6th - 7th week and the second pre-final examination in the 12th -13th week of the semester.

- **Preparation of final examination result**

Each instructor prepares the result pertaining to the academic performance of the students in his course. A student securing marks below 50% is declared fail in that course. At the end of each semester the Grade Point Average of the student in each course is calculated. For determining the semester grade point of a student the total number of points thus obtained is divided by the total number of credit hours offered by the student in the semester. The students earn their degrees/ divisions on the basis of their Over All Grade Point Average (OGPA) on a 10 point scale.

- **Post-Graduate degree programme**

The Dean Post-Graduate Studies coordinates all the Post-Graduate programmes of the University. He appoints an advisory committee for each Post-Graduate student on the recommendation of the Head of the Department and the Dean of the college concerned.

- **Requirements for the Master's and Ph.D. Degree**

A minimum of 50 semester credit hours are required for M.Sc. degree out of which 20 credits may be carried by the research and thesis work. The minimum requirements of the course work in Ph.D. is 40 semester hours made up of one major and one minor. The Ph.D. major should carry at least 20 credits. The minimum requirement for thesis work for Ph.D. is 40 credit hours. The total requirement of the postgraduate degree is of the composition of the core and basic supporting and open elective courses shall be as follows:

	Master Degree	Ph.D. Degree
(a) Core and basic supporting courses	2/3	1/2
(b) Open elective courses	1/3	1/2

The core and basic supporting courses in major are compulsory for all post-graduates students. The pre-final and semester final examinations are as in case of all UG programmes. A candidate for Ph.D. degree is required to pass the following preliminary examinations before he submits his thesis.

- Written preliminary examination (major and minor)
- Oral preliminary examination

All students admitted to the Master's and Ph.D. programmes are required to submit a thesis towards partial fulfillment to the degree programme.

27. Increase in infrastructural facilities

The infrastructure is constructed under the supervision of Director Works and Plants of the University as per policy. The new and increase in infrastructural facilities in various departments have been completed as per X plan. The XI plan has started and following new infrastructural facilities have been developed at college level:

- Up-gradation of all the existing laboratories with equipment and contingents
- Nearly seven classrooms have been equipped with the facility of LCD projector and accessories to facilitate computer-aided instruction and interactive learning.
- Smart Class room being furnished
- Construction of the Lecture Complex is to be commenced
- Computer Center and PG & UG computer labs having new Servers
- Uninterrupted power back up in the college
- It is also to mention that DST-FIST sponsored facility developed in the Department of Environment Science for instrumentation, computation facility and library is continued.
- Following new laboratories have been started:
  - Rhizosphere Biology Laboratory
  - Environmental Analysis Laboratory made functional
- There exists a mango orchard under Department of Plant Physiology which was fenced during the year.

28. Technological Up-gradation

A list of equipment purchased during the year has increased the technological grade of the academics of the college. A list of such equipment has been given in the Annexure-IV. The cell is listing only significant equipments purchased by the eminent faculty from the International Market in the **Annexure-IV**.

29. Computer and internet access and training to teachers and students

Information and Communication Technology (ICT) competency of college teachers showed that the college ICT capacity perceived by teachers in terms of availability, use and ease of access to ICT resources were of medium level. Majority of the teachers used almost all ICT application such as mobile phone, followed by e-mail, internet, word processing, file navigation, presentation, spreadsheet, scanner, LCD, digital cameras and video cameras. ICT integration within teaching learning was found to be of medium level. Training on ICTs, LCD equipped classroom, well developed lesson plan, orientation about modern technologies and ease of access to ICT resources for teaching allowed the use of ICT in teaching learning. ICT based training with strong support for improving ICT based infrastructure with technical support has improved ICT competency of teachers. College provides computers, free internet and e-mail facilities to the student. The intranet exists in each class room, laboratory, seminar room and faculty room as well as offices. This access is maintained by central computing facility at University level. Training on computers for teachers is a regular feature under computer literacy programme of the college.

30. Financial aid to student

Financial Aid/Bursaries/Scholarships

(i) Ph.D. Programmes: Two University fellowships are awarded @3000/- per month on the basis of merit out of eligible students admitted in a major (discipline) for a period of 36 months. However, in case of sanctioned fellowships in a department remain unutilized due to non-availability of students in the major, same fellowship may be transferred to the students of other Majors.

(ii) Masters' Programmes: Master's degree students up to 50% of the total admission in respect of each Major are awarded fellowship, Graduate Research/Teaching assistantship as per regulation on the subject. However, the value of fellowship will be of Rs. 2000/- per month for the student who stands first in the merit and for the rest the value of assistantship shall be Rs.900/- per month in each degree programme. GATE fellowships are provided to GATE qualified M.Tech. students for a period of 24 months.

(iii) Exemption in tuition fee: The Exemption in tuition fee is awarded to sons/daughters/spouses of regular employees of the University in tuition fee to the extent as existing in the year 2003-2004.

(iv) Undergraduate Programmes: Following are the details of financial assistance provided by the University to the first-degree students:

Sl	Name	Value	Remarks
1.	University Merit Scholarship	Rs. 800/- per month	Awarded to the best three students in each degree programme in each batch.
2.	Bursary Scholarship	Rs. 600/- per month	Awarded to 6% students of the total number of students admitted to each programme on the basis of merit at the end of I Semester subject to income restrictions. At present it is Rs. One Lac per annum.
3.	Bursary Scholarship for Home Sc. College	Rs. 600/- per month	Awarded to 25% of the students admitted to Home Science College on the basis of merit at the end of I Semester, subject to income restrictions i.e. Rs. One Lac per annum.
4.	Free ship in Tuition fee		Awarded to 25% undergraduate students on rolls of the University on the basis of merit-cum-means.
5.	Sports Scholarship	Rs.800/- per month	Awarded to the best five all round sportsmen and sports women.

In addition, following scholarships and financial assistance are available from outside

1. Merit-cum-Means Scholarship (ICAR).
2. Backward Class Scholarship.
3. S.C. and S.T. Scholarship.
4. Scholarship for State Nominees of different States.
5. P.P.I.C. Gurgaon.
6. Scholarship under Colombo Programmes.
7. National Talent Scholarship (ICAR)
8. ICAR Sr./Jr. Fellowship.
9. UGC Sr./Jr. Fellowship.
10. CSIR Sr./Jr. Fellowship.
11. B.A.R.C. Fellowship.
12. Fellowship from M/S Aspee Agril. Foundation.
13. Indian Oil Scholarship.
14. ONGC Scholarship.
15. NCERT Scholarship.
16. Shamji Memorial Trust Scholarship.
17. Uttarakhand Krishi Utpadan Mandi Parishad Scholarship

18. S.J. Jindal Trust Scholarship
19. Major H.S. Sandhu Scholarship.
20. Mata Raj Karni Scholarship for Scheduled/ Backward Castes.
21. I.C.A.R. Scholarships for Foreign Students under various cultural exchange programmes.
22. Mahendra Hybrid Seeds, Jalna.
23. Mrs. Rila Paliwal Scholarship.
24. Dr. R.L. Paliwal Scholarship
25. Indian Herbs Scholarship.
26. Century Pulp and Paper Mills Scholarship.
27. Monsanto Scholarship
28. Smt. Chandrmukhi Memorial Scholarship.
29. Sh. Satguru Dayanand Memorial Scholarship
30. Smt. Uma Gupta Fellowship
31. Him Jyoti Foundation Trust
32. U.P. Alp Sankhyak Vittiya Avan Vikas Nigam Scholarship.
33. S.K. Mukherjee Scholarship.
34. AICTE Fellowship
35. MNES Fellowship
36. Priyank Pathak Scholarship
37. Bharti Scholarship
38. Amit Gautam Scholarship/Award

31. Activities and Support from Alumni Association

There is no undergraduate programme run by the college before 2008-09. Therefore, the need of Alumni Association was not felt at college level. However the college students were tagged to University Alumni Association. The annual meet is normally held at University level. As such as last year college started undergraduate programme, hence the initiations have been taken and students are being directed to form such an association.

32. Activities and Support from the parent + teacher Association

No such association exists at present. To establish such linkage at college level, steps have been framed out to formulize meetings with students' parents. Though, the student progress is send to parents by advisor in every semester through post. This year, the chairman of the faculty has started the practice of interacting with parents when they admit in the programme.

33. Health services

Medical Health Services

(a) Outdoor ward facilities: The University hospital has following outdoor facilities:

- General Medical Officers
- Dental Surgeon
- Lady Medical Officer
- Orthopedic Surgeon (Monday Only)

- ENT Surgeon
- Eye Surgeon
- Physician (Monday Only)

(b) Indoor ward facilities: The University hospital has indoor facilities on the male as well as female wings where the University students are kept under observation for a short period. Those needing prolonged hospitalization are referred and shifted to Sushila Tewari Hospital, Haldwani (Nainital) for needful treatment as per University rules. Emergency services are available round the clock.

(c) Investigation facilities: The facility of limited pathological investigation as well as Plain X-ray is available at the University hospital/College of Veterinary and Animal Sciences.

(d) Ambulance facilities: Facility of an ambulance is also available for transportation of seriously ill students from their hostel to the Hospital and on the request of Warden concerned for transportation to an outside hospital, if necessary.

(e) Prophylactic Measures: Immunization and vaccinations are performed every Wednesday and Friday.

34. Performance in sports activities

The department of Student Welfare provides ample scope, opportunities and facilities for the overall development of personality and leadership qualities of the students. Special stress, however, is laid on discipline, besides higher standard of academic performance. Students participate effectively in the management of hostels, food services, games & sports, cultural and literary activities. Professional societies for each college are under the guidance of Staff Counselor. It coordinates and provides facilities, activities and services as under: -

Extra-Curricular Activities

Extra-Curricular activities such as literary, cultural, social, film, hobbies and N.C.C. etc. are organized at University level and also college wise through 11 professional societies besides hostel level activities. A good infra-structure including a 900 seated University auditorium, two mini auditoria, college halls, musical instruments, double film projector and audio-visual aids are available for the organization of various debates, elocutions, arts and crafts, music, dance, folk songs and drama events besides other personality development professional competitions and contests.

Games and Sports

Games and sports activities are organized through 17 games & sports clubs. There are separate games and sports staff counselors for boys and girls. The University provides sufficient games and sports material to all the hostels as well as University level teams. Sufficient number of hostel wise and central play grounds in addition to full fledged stadium, adequately equipped gymnasium, physical fitness centre and a swimming pool exists for athletic as well as sports and games events.

35. Incentives to outstanding sports person

A weightage of 2 percent of the marks obtained in the Entrance Examination shall be given to the sports men/women candidates. This weightage shall, however be given only to

those sports men/women candidates who have played at the Inter-varsity/ State level (Junior /Senior level) as the case may be or above these levels, as evidenced by the certificate issued by these bodies.

36. Student achievements and awards

- Young Scientist Award to Deepesh Bhatt, JRF, under the discipline Agricultural Sciences and Manoj Singh, JRF under the discipline Biotechnology, Biochemistry and Microbiology in 4th USS&T Congress held at GBPUA&T, Pantnagar on 10-12th November 2009
- Jitendra Pal Singh for poster presentation and Gagan Dixit for oral presentation in 4th USS&T Congress held at GBPUA&T, Pantnagar on 10-12th November. 2009
- Ms. Gunjan Bisht was awarded J.L. Nehru Memorial fund, New Delhi for her Doctoral studies from 1st January, 2010.
- Rajdeep Singh Payal M.Sc. (Physics) joined prestigious J.L. Nehru Centre for Advanced Scientific Research (JNCASR) Bangalore as Ph.D. student.
- Rajeev Bahuguna and Ramwant Singh of Plant Physiology selected as Post Doctorate Fellow (PDF) in IARI, New Delhi.

37. Activities of the Guidance and Counseling Cell

The University imparts job-oriented professional education in the field of Agriculture, Animal Science, Veterinary Science, Home Science, Forestry, Fisheries, Engineering, Management and Basic Sciences. The duty of the University towards its students does not end here, but also includes finding suitable employment for its alumni, so that their training and abilities are used for the benefit of the nation. In order to achieve this object the University has setup a full-fledged Directorate of Placement and Counseling, which is a unique feature of the University.

38. Placement services provided to students

Placement of Students

1. Alok Satlewal, Id. No. 31888, Research Officer, Indian Oil Corporation Ltd. Faridabad.
2. Another student of MBGE joined in Nunhams Seeds with a higher package.
3. Bhaskar Jyoti Dey Id. No. 34054 M.Sc. Biochemistry selected in State Bank of India West Bengal
4. Hukum Singh in of Plant Physiology has been selected as Research Officer in ICFRE
5. M.G. Ganesan, Id. No. 35577, M.Sc. student selected as Agricultural Officer Tamil Nadu
6. Manoj Kumar, M.Sc. (Physics) joined B.A.R.C. Mumbai's training school for joining as Scientist.
7. Nishad S. Id. No. 35551 M.Sc. Biochemistry Student selected in Bhaba Atomic Research Center as Scientist.
8. Ramesh Pal Id. No. 28002 Ph.D Biochemistry student selected as ARS Scientist
9. Shradha Suman, Id. No. 35400 M.Sc. selected as Development Officer LIC India.
10. Two of the students in MBGE joined in FCI and two as VO.

39. Development programmes for non-teaching staff

The college supports to non-teaching staff for enhancing their qualification by providing them study leave for higher degrees. There exists a separate reservation policy for staff candidates. Computer literacy programmes is being run periodically for non-teaching staff.

40. Good practices of the institution

We Support Government Policies

- RTI, Citizen Charter and e-governance
- Coaching classes for students of SC/ST/ Weaker section
- High Altitude Hill Agriculture Development with Indian Army
- Krishav Mahotsav programme of state government
- Community Radio Station for technology transfer directly to farmers and other stakeholders through broadcasting.
- Transparency in all administrative decisions and project them globally through website.
- SC/ST Cell and Women Empowerment Cell
- Complaint Box and Suggestion Box in the college premise
- Early redressal of students grievances due to advisor-advisory system

41. Linkages developed with National / International, academic /research bodies

Collaborative programmes and inter-disciplinary approach to teaching

The University has collaboration with many national and international institutions. The Indian Veterinary Research Institute, Izatnagar (Bareilly), Indian Agriculture Research Institute (IARI), New Delhi, National Dairy Research Institute (NDRI), Karnal, Central Avian Research Institute (CARI), Izatnagar, Institute of Forestry Genetics & Tree Breeding, Coimbatore, Indian Grassland and Fodder Research Institute, Jhansi, Central Food Technology Research Institute, Mysore, International Crop Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad, Himachal Pradesh Krishi Vishwavidyalaya, Palampur, all the IITs, Tata Institute of Fundamental Research, Bombay, Palampur, Indian Institute of Science, Bangalore, Snow and Avalanche Study Establishment (SASE)/Defence Research & Development Organization (DRDO), Regional Engineering College, Kurukshetra, and International Rice Research Institute (IRRI), Manila, Philippines, are recognized for collaborative and interdisciplinary programmes. Memoranda of understanding are developed with outside agencies to strengthen teaching, research and extension programmes.

Collaboration with industry and other organization

1. Dr. R.K. Srivastava, Asstt. Professor, Department of Environmental Sciences has very close link with SIDCUL Pantnagar industries for providing need based services for their environmental management. Recently Dr. Srivastava has provided consultancy services to M/s Tata Motors for their Hazardous/solid waste management and prepared third part audit report. At present Dr. Srivastava is also working as Principal Investigator for "Environmental Impact Assessment study of SIDCUL-Integrated Industrial Estate-

Pantnagar" funded by Uttarakhand Council for Science and Technology (UCOST), Dehradun.

2. Establishment of a Nodal Centre in the Department for conducting workshops/ training programmes in Mathematics & Statistics supported by Uttarakhand Council of Science & Technology.
3. Established a Centre in the Department for Mathematics Training & Talent Search (MTTS) programme in collaboration with National Board of Higher Mathematics (NBHM) Department of Atomic Energy, G.O.I.

MoUs :

- 2004 CIMAP, Lucknow Collaborative Research Programme from 11.08.2004 for ten years
- 2004 VPKAS, Almora Collaborative Research Programme from 02.09.2004 for five years
- 2006 University of Manitoba, Canada Educational and academic exchanges for mutual benefit of both organizations from 13.02.2006 to Continued
- 2006 University of New England Australia Furthering cooperation through both educational and academic exchange from 08.05.2006 to Continued
- 2006 GBPI Himalyan Environment & Development, Almora Collaborative Research Programme from 17.05.2006 for five years
- 2006 Cornell University, USA Facilitate international academic exchange to develop academic and Scientific relationship and in support of collaborative research activities from 20.12.2006 to Continued
- 2007 The Regents of the University of California, USA Agreement of cooperation from 20.06.2007 to Continued
- 2007 Institute of International Agricultural at Michigan State University, USA World Technology Access Programme from 16.05.2007 to Continued
- 2008 University of Arkansas, Fort Smith, USA Promotion of educational and academic exchanges between the two institutes from 24.10.2008 to Continued
- 2009 NAIP/ ICAR Understanding the mechanism of variation in status of a few nutritionally important micronutrients in some important food crops and the mechanism of micronutrient enrichment in plant parts from 07.02.2009 to Continued
- 2009 University of Georgia, Athans, USA Agreement of cooperation from 05.11.2009 for 5 years

42. Action taken report on the AQAR of the previous year

- To update the curricula of the courses offered to students in various degree programmes with innovations in curricular design and transaction was done by most of the Departments.
- The Chairman, Board of Faculty emphasized to formulate a New Programme in Humanities as suggested by NAAC and to be submitted to University competent authority for its approval.
- The reforms have been implemented in the examination as per guidelines given by the Registrar during the year
- Establishment of SC/ST Cell for implementation of Government policies and roster as per guidelines and their monitoring and to review RTI cases at college level was done

- The capacity building for new entrants as well as Focus on Faculty Trainings and Competence Improvement was satisfactory.
- Organizing national and international seminars and workshop as well as trainings to increase the potential in feasible skill development. This was also done.
- To maintain the deals recorded in MoUs, projects, collaborative research is being monitored.
- Young staff was emphasized for new research projects and new projects started
- The class rooms for Computer Aided Teaching (CAT) have been upgraded.
- Periodically reviews of the Internal Quality Assurance and finally in the end of the year was done.
- Improvement as per Feedback from the students regarding the instruction imparted during each semester carried out.
- The complaints and redressal was done at Dean's level. No sexual harassment case was noticed.
- The cell proudly noticed that college is a non-smoking as well as zero ragging zones.

43. Any other relevant information

NCBI Gene Bank submissions:

- Nucleotide – 107
- Protein - 75

Part C

Outcomes achieved by the end of the year 2009-10

- Presently, college is running one undergraduate programme B Tech in Bio-technology was approved by state government to run in self-finance mode. The admissions were made through AIEEE. All the admissions were done smoothly and successfully.
- In this year measures were taken to monitor the smooth conduction of undergraduate programme.
- Focused study of biodiversity, bio-resources, biotechnology and environment to fulfill the mandate.
- The mission was to teaching and research in basic and applied sciences. The academic session was started and completed in time.
- The courses were reviewed and updated by each department and seven new courses were also designed.
- The students were train with high through put techniques applicable in the area of agri-biotechnology and other bio-services, such as bio-energy, bio-fertilizer, bio-control.
- A good number of students have qualified the research entry level examination conducted by various apex bodies. (CSIR-JRF: 17; CSIR-NET: 07; DBT- JRF: 07; GATE: 11; ASRB-NET: 5)
- The academic calendar including examination dates for both semesters was approved by Academic Council in the beginning of the session and according session was run through out the year.
- The implementation of examination reforms issued by the office of the Registrar around the year was done.
- The capacity building and development of the faculty was satisfactory. The faculty also delivered a number of lectures invited in various research and academic programmes. They publish Bulletins and Lab-manuals.
- There were 20 projects and running smoothly by principal investigators. Three projects were completed during the year.
- Three national seminars conducted and one patent was bagged.
- The faculty members of the college published a number of research papers in national and international journals to maintain high citation index and impact factor.
- Seven to eight staff members received the national level awards.
- Library services were improved as 9349 number of documents procured and 448 periodicals procured during the year.
- All the admissions were done smoothly as per defined procedure. Examinations were completed well in time.
- The scholarships were distributed as per norm of the apex agencies and University fellowships were also given to doctoral scholars as per University norms.
- Zero-zone was maintained for anti-ragging.
- More students were placed through College Placement Cell in compare to last year.
- Improvement as per Feedback from the students regarding the instruction imparted during each semester carried out.
- The complaints and redressal was done at Dean's level. No sexual harassment case was noticed.
- The cell proudly noticed that college is a non-smoking as well as zero ragging zones. Hence, the committee was of the view that the net outcome is satisfactory.

Part D

Plans of the Institution for next year 2010-11

- To update the curricula of the courses offered to students in various degree programmes with innovations in curricular design and transaction
- To review the progress of New Programme in Humanities as suggested by NAAC and cater to the needs of the Inter-disciplinary and New programmes to be started by other departments
- To ensure that reforms have been implemented in the examination as per guidelines given time-to-time by the Registrar
- Establishment of SC/ST Cell for implementation of Government policies and roster as per guidelines and their Monitoring and to review RTI cases at college level
- To install a complaint/ suggestion box at central location and its periodically redressal/ implementation
- To emphasizing on capacity building for faculty as well as Focus on Faculty Trainings and Competence Improvement
- Organizing national and international seminars and workshop as well as trainings to increase the potential in feasible skill development
- To maintain the deals recorded in MoUs, projects, collaborative research
- To emphasize young staff for new research projects
- To refurbished a class room for smart class room. Computer Aided Teaching (CAT)
- Periodically reviews of the Internal Quality Assurance and finally in the end of the year
- Improvement as per Feedback from the students regarding the instruction imparted during each semester
- To update of the records related to complaints and redressal
- To ensure that college is a non-smoking and zero ragging zones.

(Manoj Kumar)
Coordinator, IQAC

Annexure -I

Capacity Building and Faculty Development programmes

Presentation in Seminars/ Conferences etc.

1. Anil Kumar and Dinesh Pandey (2009) Jasmonate signal acts as a potential activator of induced resistance against karnal bunt of wheat, in 5th International Conference on Plant Pathology in the Globalized Era, November 10-13, Indian Phytopathological Society, IARI, New Delhi
2 Anil Kumar, J. M. Seneviratne and Atul K. Gupta (2009) Induction of map kinase machinery in presence of host determinants during fungal development and pathogenicity of Karnal bunt (Tilletia indica) of wheat. 5th International Conference on Plant Pathology in the Globalized Era, November 10-13 Indian Phytopathological Society, IARI, New Delhi.
3 Anil Kumar, Nidhi Gupta and Atul K. Gupta (2009) Biotechnology and genomics based revolution of genetically modified foods: Are they safe? In National Seminar on Nutrition strategies for improving quality of life organized by Department of Foods & Nutrition, College of Home Science, GBPUA&T, Pantnagar.
4 Anil kumar, Nishant K. Ojha, Atul k. Gupta and Sonu Ambwani (2009) Use of potential Biomarker(S) of insulin signaling pathway for screening of Anti-diabetic properties of Aloe spp. In 20th International Symposium on Pharmaceutical & Biomedical Analysis, Agra.
5 Anshita Goel, Soma S. Marla and Anil Kumar (2009) Comparative analysis of cystatin sequences in Arabidopsis thaliana, Oryza sativa and Sorghum bicolor, 4th Uttarakhand State Science & Technology Congress, November 10-12, GBPU&T.
6 Arpita Mishra, Dinesh Pandey, V K Singh and Anil Kumar (2009) Molecular cloning and in silico analysis of functional homologues of hypersensitive response gene(s) induced during pathogenesis of Alternaria blight in brassica, 5th International Conference on Plant Pathology in the Globalized Era, November 10-13, Indian Phytopathological Society, IARI, New Delhi.
7 Atul K Gupta, J M Seneviratne, U S Singh, G K Joshi and Anil Kumar (2009) Alteration of Genetic make-up of Karnal bunt (Tilletia indica) pathogen of wheat in presence of host factors extracted from wheat spikes. 4th Uttarakhand State Science & Technology Congress, November 10-12, GBPUAT, Pantnagar.
8 Atul K. Gupta, J M Seneviratne, Gohar Taj, G K Joshi and Anil Kumar (2010) Floret specifity of Karnal bunt pathogen of Wheat due to host factor(s) favouring fungal growth and induction of map kinase module responsible for morphogenetic development, in International Congress on understanding and managing pathogenic microbes, January 22-24, Institute of Microbial Technology, Chandigarh
9 Deepesh Bhatt, Priydarshini, MGH Zaidi and Sandeep Arora (2009). Effect of silver nanoparticles on growth and antioxidant status of Brassica juncea under oxidative stress. 4th USS&T Congress, November 10–12, GBPUA&T, Pantnagar
10 Dinesh Pandey, Arpita Mishra and Anil Kumar (2009) Probing the involvement of hypersensitive response gene(s) during pathogenesis of Alternaria blight in Brassica Juncea, 4th USS&T Congress, November 10-12, GBPUA&T, Pantnagar
11 J M Seneviratne, Atul K Gupta, Dinesh Pandey, U S Singh, Indu Sharma and Anil Kumar (2009) Determination of genetic divergence based on DNA markers amongst monosporidial strains derived from fungal isolates of Karnal bunt (Tilletia indica) of Wheat. 5th International conference on Plant Pathology in the Globalized Era, November 10-13, 2009, organized by Indian Phytopathological Society, ICAR

12 Kuldeep Singh, Parveen Juneja, Vijay K. Tiwari, Nidhi Rawat, Kumari Neelam, Renuka Aggarwal, Sandeep Malik, Beat Keller, Harcharan S. Dhaliwal (2010) Mapping of QTL for Grain Iron and Zinc Content in Diploid A Genome Wheat and Validation of These Loci in U and S Genomes. In a Conference on Plant & Animal Genomes.

13 Manoj Singh and Anil Kumar (2009) Preparation of nano gold particles labeled antibody probe for developing single step immuno-chromatography assay for diagnosis of quarantined Karnal bunt (Tilletia indica) disease of wheat, 4th USS&T Congress, November 10-12, GBPUA&T.

14 Manoj Singh, Shalini Bhutani, Sadhna Singh and Anil Kumar (2009) Determination of teliospore load in karnal bunt infected seed samples of wheat using indirect ELISA for providing new standards in seed certification, 5th International conference on Plant Pathology in the Globalized Era, organized by Indian Phytopathological Society, IARI, New Delhi, November 10-13.

15 Preety Panwar, Netrapal Sharma, Vijay Kumar Yadav and Anil Kumar (2009) Genetic Variability and association of RAPD and SSR markers with calcium and protein contents in Finger millet (Eleusine coracana L. Gaertn) genotypes of Uttarakhand, 4th USS&T Congress, November 10–12, GBPUA&T, Pantnagar

16 Sadhna Singh, Manoj Singh, K. P. Singh and Anil kumar (2009) An attempt to develop surface plasmon resonance based immunosensor for Karnal bunt (Tilletia indica) diagnosis based on the experience of nano-gold based lateral flow immunodipstic test, India-Japan Workshop on Biomolecular Electronics & Organic Nanotechnology for Environment Preservation, 17-20 December, DST Centre on Biomolecular Electronics, NPL, N.Delhi and Kyushu Institute of Technology, Japan

17 Saurabh Pandey, Manisha Negi & Sandeep Arora (2009) "In Silico Assessment of apx Gene Function Involved in Antioxidant Defense Pathway." in the 4th USS&T Congress, Nov 10-12.

18 Sonu Ambwani, Tanuj K. Ambwani, G.K. Singh and R.S.Chauhan (2009). In vitro evaluation of ameliorating effects of cow urine on zineb induced immunosuppression and oxidative stress in chicken lymphocytes. USST Congress, GBPUA&T, Pantnagar, 10-12 November.

19 Reeta Goel, Prof. & Head, Microbiology(2009) attended workshop on "Microbial Fermentation and Bioinoculants Preparation for Organic Farming", sponsored by DST at Gurukul Kangri University, Haridwar, 6-10 Feb.

20 Lakshmi Tewari, Asstt. Prof. and Manvika Sahgal, JRO, Microbiology (2009) attended National Conference on "Engineering for Food and Bioprocessing" sponsored by TEQUIP at Department of Post Harvest Process & Food Engineering, GBPUA&T., Pantnagar, 27 Feb- 1 March

21 Kapri, A. Zaidi, MGH and Goel R. (2009) Nanobarium titanate as supplement to accelerate plastic waste biodegradation by indigenous bacterial consortia. International Conference on Transport and Optical Properties of Nanomaterials.

22 Govind Kumar, Manvika Sahgal amd Anupama Singh (2009) on Screening of indigenous yeast isolates for production of ethanol from apple pomace. In National Conference on Engineering for Food and Bio-Processing, 27 Feb-1 March, College of Technology, Pantnagar.

23 Anju Rani and Reeta Goel (2009). Effect of psychrotolerant cadmium resistant Pseudomonas putida 710A strain on mungbean (Phaseolus vulgaris) growth in presence of cadmium In 4th USS&T Congress, GBPUAT, Pantnagar.

24 Shalini Phartyal, Megha Pandey, Nimisha Singh, Anjana Srivastava and Anita Sharma (2009). Dissipation and degradation of lindane by actinomycetes isolated

from contaminated sites of Pantnagar University campus. In 4th USS&TCongress, GBPUAT, Pantnagar.

25 Govind Kumar, Manvika Sehgal and A. Singh (2009). Evaluation of Saccharomyces based ethanol production from apple pomace In 4th USS&T Congress, GBPUAT, Pantnagar

26 Arti, Jitendra Saini and Lakshmi Tewari (2009). Selection of indigenous thermotolerant and high alcohol tolerant isolates of yeast for bioethanol production In 4th Uttarakhand State Science and Technology Congress, GBPUAT, Pantnagar

27 Swati Chauhan, Govind Kumar and Rajesh Kumar (2009). Heavy metal remediation using biosurfactants from plant growth promotory fluorescent pseudomonads isolated from oil contaminated site. In 4th USSTC, GBPUAT

28 Jitendra K Saini, Arti, BN Kumbhar and Lakshmi Tewari (2009). Response surface optimization of dilute acid and alkali pretreatment of sweet sorghum bagasse for microbial saccharification In 4th Uttarakhand State Science and Technology Congress, GBPUAT, Pantnagar

29 Sachin Kumar Vaidh, Deepak Joshi and Anita Sharma, 2010, Assessing Zinc solubilizing potential of rhizospheric bacteria in wheat presented at International Conference on "Rhizosphere Biology of Agriculture, Horticulture and Forestry: Present and Future", C.B.S.H., GBPUA&T, Pantnagar, 25-27th Feb.

30 Rekha Rawat & Lakshmi Tewari, 2009, Phosphate solubilizing potential of heavy metal tolerant Trichoderma species and it s biocontrol efficiency against fungal phytopathogens In 4th USS&T Congress, GBPUAT, Pantnagar

31 Vir Singh, Professor, Env. Sc. on Sustainable Agriculture and Food Security organized by GAD Institute of Development Studies, Amritsar, 7-8 November.

32 Vir Singh, Professor, Env. Sc.(2009) in National Conference on Climate Change in the Himalayas organized by Navdanya, Dehradun, 17 November.

33 Pandey, A. and Srivastava, R.K., 2009. Domestic wastewater management: source of energy & sink of carbon. Presented in National Seminar on global warming and role of environmental education in technical institutions and industries, Apex Institute of Technology, Kaushalganj, U.P., April 16.

34 Banerjee, T. and Srivastava, R.K. 2009. Application of Air Pollution Index for evaluating air quality in SIDCUL IIE-Pantnagar. In National Seminar on global warming and role of environmental education in technical institutions and industries, Apex Institute of Technology, Kaushalganj(U.P.) April 16.

35 Singh, M., Pant, M. and Srivastava, R.K. 2009. Vermicomposting: As a tool for Waste Management. Presented in National Seminar on global warming and role of environmental education in technical institutions and industries, Apex Institute of Technology, Kaushalganj, U.P., April 16.

36 Joshi, M. and Srivastava, R.K. 2009. Indoor air pollution associated with solid fuel combustion: A review. Presented in National Seminar on global warming and role of environmental education in technical institutions and industries, Apex Institute of Technology, Kaushalganj, U.P., April 16

37 Banerjee, T. and Srivastava, R.K. 2009. Evaluation of ambient air quality at IIE-Pantnagar and its surroundings through combined air quality index. International Symposium on Environmental Pollution, Ecology and Human Health, Dept. of Zoology, S.V. University, Tirupati, Andhra Pradesh.

38 Joshi, M. and Srivastava, R.K. 2009.Study of wood borne indoor air pollution in Hilly and Tarai region of Uttrakhand. 4th USS&T Congress, 10-12 November.

39 Pandey, A. and Srivastava, R.K. 2009. A low cost alternative technology for wastewater treatment (overland waste renewal system). 4th USS&T Congress. 10-12 November.

40 Singh, Mohini and Srivastava, R.K. (2009). Performance study of a fixed-bed bio film sequencing batch reactor under different operational conditions. 4th USS&T Congress, 10-12 November.

41 Banerjee, T. and Srivastava, R.K. (2009) Industrial impacts on surface water quality: A case study of IEE-Pantnagar. 4th USS&T Congress, 10-12 November.

42 Kaphaliya, Bhumija & Srivastava, R.K. (2009) Assessment of Rotatory biological contactor (RBC) for Pollutant removal from the Dabur India Limited Industry waste water, 4th USS&T Congress, 10-12 November.

43 Govind S. Kushwaha, Asstt Profesoor (Psychology) on "Role of Poverty and Social Stress on Mental Health" in a National Seminar on Mental Health & Current Scenario at Gurukul Kangri University, Haridwar on 20-21, March, 2009

44 Rao, P.B., Sarika and N. Pandey. 2009. Response of different weed species on seed germination, protein content and its banding pattern in different varieties of wheat. In Seminar on Promotion and Adoption of Rural Technologies in the State under the Global Theme 'Heal, Fuel, Feed the World'. 4th USS&T Congress, GBPUA&T, Pantnagar, 0-12 Nov.

45 Rao, P.B. and Prachi Rajput. 2010. Role of Allelopathy Rhizosphere. In International Workshop on 'Rhizosphere biology of Agriculture, Horticulture and Forestry: Present and Future' held at Department of Biological Sciences, GBPUA&T, Pantnagar, 25-27 Feb.

46 Lajja, V., J. Bhawana, A.K. Sharma and P.B.Rao. 2010. Effect of certain environmental factors on seedling growth in Four Different medicinal plant species. In International Workshop on 'Rhizosphere biology of Agriculture, Horticulture and Forestry: Present and Future' held at Department of Biological Sciences, GBPUAT, Pantnagar, 25-27, February.

47 A.K. Pant & Om Prakash 2010 participated as members of delegation nominated by UCOST, Dehradun in International Symposium on Green Chemistry held in Delhi University, January.

48 Om Prakash, Asstt. Prof. (2010) participated in the National Symposium held during 20-21 February held at LR PG College, Ghaziabad.

49 Shishir Tandon, JRO (2010) participated in Biennial Meeting on National Coordinated Weed Control held in Raipur in February.

50 Mahto, B. N., Asstt. Professor, Sociology (2010) participated in Regional Seminar on Intellectual property & innovation management in knowledge era at CBS&H, GBPUA&T, Pantnagar, March 16.

51 Prabha Pant, Asstt. Professor, English (2009) presented in an International Seminar on "The Novels in the Twenty-first Century: Text and Context", Department of English & Modern European Languages, University of Allahabad, Allahabad. Nov. 29-Dec.1,

52 Jitendra Pal Singh, R.C. Srivastava, H. M. Agrawal and Ravi Kumar, Raman (2009) Study of SHI Irradiated Zinc Ferrite Nanoparticles; DAE Solid State Physics Symposium.

53 Kamla Pandey, Jitendra Pal Singh, R.C. Srivastava, and H. M. Agrawal (2009) Effect of sintering temperature on the structural and magnetic properties of N1.01Sn0.01Fe1.98O4; DAE Solid State Physics Symposium.

54 Jitendra Pal Singh, R.C. Srivastava, H. M. Agrawal and Ravi Kumar. 2009 a) Study of Swift Heavy Ion Irradiated Nanosized Zinc Ferrite; b) Structural Characterization

of Nickel Ferrite Thin Films irradiated with 200 MeV Ag15+ beam in IVth USS&T Congress, GBPUA&T, Pantnagar, 10-12th November.

55 Jitendra Pal Singh, R.C. Srivastava, H. M. Agrawal and Prem Chand. 2009 Temperature Dependent Magnetic Resonance Study of Nanosized Zinc Ferrite; IVth USST Congress-2009 organized by GBPUA&T, Pantnagar, 10-12th November.

56 Uma D. Sharma, R. Kumar and M. Kumar, 2009 "Effect of pressure on nanomaterial", 4th USS&T Congress.

57 R. Kumar, Uma D. Sharma and M. Kumar, 2009 "Effect of size on melting temperature of nanomaterials", 4th USS&T Congress

58 Bhawna Pandey, Kailash Pandey, H.M.Agrawal 2009 on "Excitation Functions of 58,60Ni (n,2n) Reactions" Proceeding of 4th USS&T Congress

59 Kamla Pandey, J.P.Singh,, R.C.Srivastava, H.M. Agrawal, S.K. Agrawal and Prem Chand 2009 "Effect of Sintering Temperature on the Structural and Magnetic Properties of Ni1.01Sn0.01Fe1.98 O4", 54th DAE Solid State Physics Symposium

60 Jitendra Pal Singh, R.C.Srivastava, H.M. Agrawal, V.G. Sathe and Ravi Kumar. 2009 "Raman study of SHI Irradiatred Zinc Ferrite Nanoparticles", 54th DAE Solid State Physics Symposium

61 Kamla Pandey, Jitendra Pal Singh, R.C. Srivastava, H. M. Agrawal and Prem Chand 2009 Structural and Magnetic properties of Nanostructured Ni1-xZnxFe2O4 ferrite ; International Conference on Multifunctional Oxide Materials, Department of Physics, Himachal Pradesh University, Shimla, Himachal Pradesh, 16-18th April.

62 Gagan Dixit, Jitendra Pal Singh, R.C. Srivastava, and H. M. Agrawal 2009 Annealing Effect on the Structural and Magnetic Properties of Nickel Ferrite Thin Films; International Conference on Multifunctional Oxide Materials, Department of Physics, Himachal Pradesh University, Shimla, Himachal Pradesh, 16-18th Aprill.

63 R.C. Srivastava, Jitendra Pal Singh, H. M. Agrawal, Ravi Kumar, Amita Tripathi, R. P. Tripathi, V. R. Reddy and Ajay Gupta, 2009 57 Fe Mössbauer investigation of nanostructured zinc ferrite irradiated by 100 MeV Oxygen beam; International Conference on the Application of Mossbauer Effect (ICAME-2009) organized by Institute of Solid State Physics, Technical University, Vienna, Austria,19-24th July.

64 Bhawna Pandey,Kailash Pandey,H.M.Agrawal and Ashok Kumar 2009 "Excitation Functions of 58,60,61Ni(n,p), 54,56,57Fe(n,p) and 52,53,54Cr(n,p) Reactions", Proceeding of International Symposium on Nuclear Physics, 374-375

65 Jitendra Pal Singh, R. C. Srivastava and H. M. Agrawal 2009 Optical Behaviour of Zinc Ferrite Nanoparticles; International Conference on Nanoscience and Nanotechnology (ICANN-2009) organized by IIT, Guwahati, 9-11 December.

66 Gagan Dixit, R. C. Srivastava, Jitendra Pal Singh, and H. M. Agrawal 2009 Magnetic Study of Nickel Ferrite Nanoparticle; International Conference on Nanoscience and Nanotechnology (ICANN-2009) organized by IIT, Guwahati, 9-11 December.

67 Chandola, A, Shankhdhar, S.C and Shankhdhar Deepti 2009. In vitro callus induction and regeneration in Withania somnifera; National conference on Frontiers in Plant Physiology towards Sustainable Agriculture, Assam Agriculture University, Jorhat, November 5-7,2009.

68 Mathpal, B., Shukla, Alok, Shankhdhar Deepti and Shankhdhar, S.C. Physiological evaluation of iron efficient rice (Oryza sativa L.) genotype at different nitrogen level. National conference on Frontiers in Plant Physiology towards sustainable ariculture, ssam Agriculture University, Jorhat, November 5-7, 2009.

69 Mathpal, B., Shukla, Alok, Shankhdhar, Deepti and Shankhdhar, S.C. Effect of different nitrogen levels on growth, yield and nitrogen use efficiency of five rice genotypes. IVth USS&T Congress at GBPUA&T, Pantnagar, 10-12th Nov., 2009

70 S. K. Guru attended biennial workshop of AICRP- weed control at IGKV, Raipur, 23-24 Feb. 2010.

Invited Lectures in Training Workshops /Refresher Courses/Conferences etc.

1. A.K. Pant, Professor & Head, Chemistry in International Seminar held on Green Chemistry at C.C.S.U. Meerut on Dec. 27-30, 2009.
2 Sanjeev Agrawal, Professor & Head, Biochemistry on "Quality aspects of seed spices for export" at National Workshop on Spices & Medicinal Plants in 21st century India at SKN College of Agriculture, (Raj Agric Univ.) Jobner on Dec 20-21, 2009.
3 Anil Kumar, Professor & Head, MBGE on "Biotechnology and genomics based revolution of genetically modified foods: Are they safe?" In National Seminar on Nutrition strategies for improving quality of life organized by Dept of Foods & Nutrition, College of Home Science, GBPUA&T, Pantnagar Sept 11-12, 2009.
4 Anil Kumar a) with Sanveen Kaur and Dinesh Pandey on Food biotechnology: a unique opportunity for the food industries in quality assurance of foods. b) with Sadhna Singh and Dinesh Pandey on Application of Nanotechnology in Food Processing and Packaging. In Short Course on "Food Processing and Value Addition towards Nutritional Security" organized by Dept of Foods & Nutrition, College of Home Science, GBPUA&T, Pantnagar Dec 7-8, 2009.
5 Anil Kumar with Manoj Singh on a) Immunological technique in plant disease surveillance and seed health management b) In-situ hybridization (ISH): Principles and Practices. In a Short course on "Plant tissue culture practices" organized by Department of Botany, Kumaon University, Nainital, Dec10, 2009.
6 Anil Kumar with Gohar Taj on Molecular techniques for enhancing seed oil yield and quality coupled with productivity in Short Training course on Jatropa: A source of new energy as Biofuels organized by Defence Institute of Bio-energy Research, Haldwani, Dec10, 2009.
7 Anita Sharma Asstt Professor Microbiology on "Plant Growth Promoting & Rhizobacteria" and "Use of Zinc solubilizing bacteria on Plant Growth Promotion" in NAIP Workshop held at Deptt. of Soil Science, G.B.P.U.A.T, Pantnagar, 12-19 Jan. 2010.
8 Anita Sharma on "Biofertilizer: Role in combating antimicrobial resistance in agriculture" during National Conference on antimicrobial resistance held at Allahabad 23-25th March, 2009
9 B. Mohan Kumar, Professor & Head, Social Sciences & Humanities delivered lectures on "Indian Philosophy of Education" and "Emerging challenges and contemporary issues in education" on March 24 and 31, 2009 in the ICAR sponsored Summer School on Emerging technologies of communication and education for management of learning, College of Agriculture, GBPUA&T, 18 March-7 April, 2009.
10 B. Mohan Kumar delivered invited lecture on "Emerging trends and challenges of Social Sciences" in the Annual Conference of Indian Association of Social Science Institutions at Giri Institute of Development Studies, Lucknow on 6-7 November, 2009
11 B. Mohan Kumar delivered four lectures related to human rights entitled "Human Rights in the globalizing world"; "Institutional constraints on realizing human rights"; "Judiciary and protection of human rights" and "RTI as a mechanism to safeguard human rights" in a UGC Refresher Course on Human Rights at Academic Staff College, Kumaun University, Nainital on 18-19 December, 2009

12 B. Saini, Professor, English on "Reflective Teaching" and "Microteaching Lab" (as observer), on March 26 & 27, 2009 in the ICAR sponsored Summer School on Emerging technologies of communication and education for management of learning, College of Agriculture, GBPUA&T, 18 March-7 April, 2009

13 J. P. N. Rai, Professor, Env. Sc. delivered 11th K.N. Singh Memorial lecture on Climate change and Biodiversity at Kamala Nehru Institute of Technology Sultanpur on 19 December, 2009.

14 J. P. N. Rai delivered a Keynote lecture and chaired a technical session in a National Seminar on Biodiversity and Climate Change at Varanasi, 16-18 December 2009.

15 J. P. N. Rai on Toxicology of manmade ecosystem at ITRC Lucknow, 6-7 May, 2009.

16 R. C. Srivastava, Assoc. Professor, Physics delivered talk in the National Conference on Synthesis and Characterization of Smart Materials, Bareilly College, Bareilly, Sept. 12-14, 2009.

17 R. C. Srivastava delivered talk in the 4th Uttarakhand Science and Technology Congress, Pantnagar Nov. 10-12, 2009

18 Reeta Goel Prof & Head, Microbiology delivered Keynote Address at Golden Jubilee Symposium on "The Microbial Cell: A Remedy for White Pollution" at Indian Institute of Petroleum, Dehradun, on 11 Dec, 2009.

19 Reeta Goel on "Metagenomics & Microbial Diversity" at National Symposium of Molecular Cell Biology at Department of Biochemistry, Shivaji College, New Delhi, on 25 Nov, 2009.

20 Reeta Goel on "Role of Metagenomics for Understanding the Rhizosphere Biology" at International Workshop on Rhizosphere Biology of Agriculture, Horticulture and Forestry: Present and Future, CBSH, GBPUA&T, Pantnagar, 26 Feb, 2010

21 Sonu Ambwani, Tanuj Ambwani and R S Chauhan on Recent Immunological Techniques in Diagnostics in Short Term Training on Enzyme Immunoassays and Related Techniques at IBT, Patwadangar, Nainital, 2009

22 R.K. Srivastava, Assoc. Professor, Env. Sc. Guest Lecture on "An Introduction to EIA studies-Need, Significance, Basic requirements & Methodology" in a Training on Industrial Development & its Impact on Environment, Dept of Civil Engineering, College of Technology, GBPUA&T, Pantnagar, 5th Feb., 2009

23 T Ambwani, Sonu Ambwani and R S Chauhan. Enzyme linked immunosorbant assays in short training programme on Diagnosis of Rabies held at IBT (GBPUA&T), Patwadangar, 2009

24 Uma Melkania Professor & Head, Environment Sc on "Carbon sequestration and Carbon credits" in a Training Course on "Developing afforestation, reforestation, clean development mechanism with special reference to baseline data collection for Indian Forest Service (IFS) officers" at Amity University, Noida, 30th October 2009.

25 Uma Melkania on "Carbon sequestration and Carbon credits" in a Training Programme organized by Defence Energy Bio-Resource (DEBR) Haldwani, Dec 7, 2009.

26 Uma Melkania delivered Keynote address on "Carbon footprints and energy management" in a National Conference on Information Technology at GLA Institute of Business Management, Mathura, 20 Feb, 2010.

27 Uma Melkania, Professor & Head, Environment Sc. on "Carbon footprint" in a Workshop on experience sharing and expectation under Indo-UK collaborative project, IIT, New Delhi, 22-23 September 2009.

28 S.K.Guru Asstt Professor Plant Physiology in the NAIP-training programme on"Extraction and purification of root exudates"15th Jan. 2010.

Participation in Trainings etc.

1. B.R. Singh, Asstt Professor MBGE in Winter School on Genomics and Metagenomics Analysis in Research and Diagnosis from 22nd Oct -11th Nov 2009 organised by Division of Biochemistry, IVRI , Izatnagar, Bareilly
2. Sonu Ambwani Asstt Professor, MBGE in ICAR-funded training on "Bioinformatics and Statistical Genomics" at Indian Agricultural Statistics Research Institute, ICAR New Delhi held from *November 17–December 7, 2009*
3 A.K.Verma, JRO, Biochemistry in a 21-days winter school on "Genome and Metagenome analysis in Research and Diagnosis" organized by Division of Biochemistry Indian Veterinary Research Institute Izatnagar
4 Ashutosh Dubey JRO, Biochemistry in a 21-days winter school on "Bioprospecting for microorganisms with agriculturally important traits using polyphasic approaches" organized by Division of Microbiology, Indian Agriculture Research Institute, New Delhi,
5 Himanshu Punetha in a 21-days winter school on "Recent Advances in Dairy Nutraceuticals and Bioinformatics Applications" organized by N.D.R.I. Karnal.
6 Preeti Chaturvedi, Astt Professor, Biological Sc. in training on Food Processing and value addition towards nutritional security December 02-11, 2009. Dept of Foods and Nutrition, College of Home Sciences, GBPUA& T, Pantnagar.
7 Mahto, B. N., Asstt. Professor, Sociology in UGC Refresher Course on Gandhian Studies at Academic Staff College, Rajasthan University, Jaipur on July 20- August 8, 2009.

Foreign visits

1. Anil Kumar, Professor & Head, MBGE has delivered lecture on "Modern and rapid on-site diagnostic tests for quarantined fungal pathogens such as Karnal bunt (Tilletia indica) of wheat" as an invited lead speaker in 10th International Conference on Agri-Food Antibodies under Society of Food and Agricultural Immunology (SFAI), Chester (UK) held at Wageningen, Netherland, Sept 7-10, 2009
2. Anil K. Sharma, Assoc. Director, Biological Sc. visited three foreign countries: England: For delivering lectures at University of York; Finland and Switzerland: For attending annual meeting of Project.
3 S Ambwani, Astt Professor, MBGE along with T Kumar Ambwani, G K Singh, R S Chauhan attended International Conference on Environmental Mutagens (ICEM) and presented paper on In vitro evaluation of propoxure induced oxidative stress, immunosuppression and apoptosis in avian lymphocytes held in Firenze, Italy on August 20-25, 2009.
4 Vir Singh, Professor, Env. Sc. attended International Training in Environmental Management by Galilee College, Israel, 17 March-6 April, 2009

Visits by eminent scholars/ dignitaries

- Dr. Banwari Lal, Director, TERI, New Delhi
- Dr. D.K. Maheshwari, Prof. & Head, Deptt. of Microbiology, Gurukul Kangri, Hardwar
- Dr. T. Satyanarayana, Prof. Deptt. of Microbiology, Delhi University South Campus

- Dr. Rakesh Tuli, Director, National Botanical Research Institute, Rana Pratap Marg, Lucknow
- Dr. B.D. Lakchaura, Director, Deo Sthali Institute of Technology, Lalpur-Rudrapur
- Dr. G K Garg, Director R & D, Krishidhan Seeds Ltd., Jalana, Maharashtra
- Dr. K.C. Bansal, Professor, National Research Centre on Plant Biotechnology, I.A.R.I., New Delhi
- Dr. Srikanth Manchikanti, CEO, Siri Technologies Pvt. Ltd. No. 4, 5th Main, Jayanagar, Bangalore
- Dr. Anil Mavila, President, ILS Bioservices, 154 S, Sector 7, IMT Manesar, Gurgaon
- Dr. Sudhir Srivastava, Ex. Dy. Director, C-898/A, Mahanagar, Near Rahim Nagar Crossing, Lucknow
- Dr. Deepak Agarwal. Scientist F, Deputy Director, IITR, M G Marg, P.O. Box 80, Lucknow
- Dr K. Srinivas, Scientist, Ranbaxy Research Laboratories, Gurgaon
- Mr. R. Saha, Advisor, DST Director PFC, Technology Information Forecasting & Assessment Council (TIFAC), DST
- Dr. T. Mohapatra, Principal Scientist, NRCPB, IARI, New Delhi
- Dr. Zakwan Ahmad, Director, DIBER (DRDO), Gora Parao, Haldwani

Annexure -II

Ph.D. Scholars working in various Departments in the College (2009-10)

1. Department of Biochemistry

- Amit Verma 35489 (2007-08)
- Ms. Rachna 32760 (2007-08)
- Ms. Aarti Barthwal 35623 (2007-08)
- Sheshanu Gupta 34127 (2006-07)
- Varun Gupta 35445 (2007-08)
- Navin Chandra Pant 28010 (2008-09)
- Ramesh Singh Pal 28002 (2008-09)
- Ms. Ruchi Agarwal 32788 (2008-09)

2. Department of Biological Sciences

- Ms. Prachi Rajput 34118 (2009-10)
- Yogendra Singh Gusain 39365 (2009-10)
- Ms. Kanchan Joshi 35376 (2009-10)

3. Department of Chemistry

- Ms. Gunjan Bhatia 32783 (2007-08)
- Ms. Aparna Thakur 35442 (2007-08)
- Ms. Jyoti Pandey 35443 (2007-08)
- Ms. Gunjan Bisht 34120 (2008-09)
- Ms. Hem Lata Tewari 34124 (2008-09)
- Ms. Jyoti Kumari 36995 (2008-09)
- Ms. Suman Lata Pal 36980 (2008-09)
- Shailendra Singh Chauhan 35373 (2009-10)
- Harish Madula 39362 (2009-10)
- Prakash Singh 34106 (2009-10)
- Ms. Neelam Arya 39361 (2009-10)
- Ms. Ruchi Agarwal 35361 (2009-10)
- Satyendra Kumar 39363 (2009-10)

4. Department of Environmental Sciences

- Ms. Shweta Saraswat 35446 (2007-08)
- Ms. Asha Pandey 35447 (2007-08)
- Ms. Anshul Fuloria 28054 (2007-08)
- Bhumija Kafalia 32766 (2007-08)
- Ms. Patibha Singh 35448 (2007-08)
- Ms. Mohini Singh 33977 (2008-09)
- Ms. Kavita Tariyal 33980 (2008-09)
- Vipin Kumar 36982 (2008-09)
- Ms. Akansha Rastogi 34002 (2008-09)
- Ms. Nanda Nautiyal 35354 (2009-10)
- Anand Prabha Rawat 34007 (2009-10)
- Ms. Kanchan Joshi 35376 (2009-10)
- Ms. Suman Panwar 39366 (2009-10)

- Ms. Monica 39367 (2009-10)

5. Department of Mathematics, Statistics & Computer Science

- Ms. Garima Chopra 35450 (2007-08)
- Ms. Vandana Bisht 35449 (2007-08)
- Prakash Chandra Mathpal 35451 (2007-08)
- Deepak Chandra Pandey 34100 (2008-09)
- Ms. Sangeeta Pant 36986 (2008-09)
- Ms. Nidhi Tewari 37143 (2008-09)
- Ms. Priya Saxena 36987 (2008-09)
- Navneet Joshi 36985 (2008-09)
- Ms. Beena Nainwal 39368 (2009-10)
- Bhagwati Prasad Joshi 25368 (2009-10)
- Bhaskar Chandra 39479 (2009-10)
- Vimal Kumar 35421 (2009-10)
- Ms. Surbhi Sangar 39484 (2009-10)

6. Department of Microbiology

- Ms. Shalini Fartyal 32750 (2007-08)
- Sachin Kumar Vaidh 35624 (2007-08)
- Ms. Himani Pandey 35445 (2007-08)
- Ms. Ruchi Tewari 32752 (2007-08)
- Ms Shubhra Singh 32816 (2007-08)
- Priyam Gupta 35625 (2007-08)
- Ms. Nilofar Mirza 35454 (2007-08)
- Ms. Rekha Rawat 33969 (2008-09)
- Ms. Swati Chauhan 33989 (2008-09)
- Shahbaz Anwar 36989 (2008-09)
- Ms. Komal Agrawal 35331 (2009-10)
- Ms. Megha Pandey 35332 (2009-10)

7. Department of Molecular Biology & Genetic Engineering

- Ms. Deepti Bhogal 32774 (2008-09)
- Ms. Vineeta Singh 36991 (2008-09)
- Saurabh Badoni 37173 (2008-09)
- Ms. Pallavi Sah 34087 (2008-09)
- Lalan Kumar 35477 (2009-10)
- Ms. Eti Sharma 39369 (2009-10)
- Ms. Priyanka Giri 39371 (2009-10)

8. Department of Physics

- Ms. Geeta Rana 35457 (2007-08)
- Girish Chandra 32819 (2007-08)
- Raghuvesh Kumar 35487 (2007-08)
- Ms. Kamla Pandey 31722 (2007-08)
- Ms. Bhawana Pandey 35456 (2007-08)
- Puneet Negi 36992 (2008-09)

- Ms. Archana Bhatt 36993 (2008-09)
- Ms. Garima Bisht 37170 (2008-09)
- Hemant Kumar 37117 (2008-09)
- Alok Gangola 29659 (2009-10)
- Ms. Vishalakshi Joshi 39372 (2009-10)
- Vijay Veer 39373 (2009-10)
- Hem Chandra Pandey 35364 (2009-10)
- Ms. Manju Bhatt 39562 (2009-10)

9. Department of Plant Physiology

- Ms. Kamla Kumari Dhyani 35490 (2007-08)
- Ms. Bhawana Joshi 35629 (2007-08)
- Ms. Pawanika Chandola 35626 (2007-08)
- Hukum Singh 35459 (2007-08)
- Ms. Babita Patni 34096 (2008-09)
- Ms. Bhavna Thakur 34090 (2008-09)
- Ms. Kratika Bhandari 30659 (2008-09)
- Ms. Kiran Bharti 37141 (2008-09)
- Rahul Tyagi 37024 (2008-09)
- Ms. Rashmi Verma 39374 (2009-10)
- Ashish Sharma 34138 (2009-10)
- Ms. Neelam Dhiwan 35464 (2009-10)

Annexure -III

Citation Index of faculty members and Impact Factor

PUBLICATIONS of FACULTY MEMBERS

Books

1. Anil K. Sharma, Seema Wahab and Rashmi Srivastava (2010) *Agriculture Diversification: Problems and Perspectives*. I.K. International Publishing House Pvt. Ltd., New Delhi, p.210.
2. Anil Kumar & Dinesh Pandey (Ed.) *Techniques in Cell Biology* (in process)
3. Anil Kumar**,** BRK Gupta and S D Samtaray. 2009. *A Resource Directory, Science & Technology in Uttarakhand: Institutional Capabilities & Strength*. State Biotechnology Programme, Govt. of Uttarakhand (on CD as well)
4. Anil Kumar, Ranjan Srivastava and B.R. Singh (Ed.) 2009 *Padap Vridhi Niyantrak: Kya, Kyon aur Kaise*, University Publications, Pantnagar.
5. N K Joshi and Vir Singh. 2010. *Traditional Ecological Knowledge of Mountain People: Foundations for Sustainable Development in the Hindu Kush-Himalayan Region*. Daya Publishing House, New Delhi. pp 232
6. B. Mohan Kumar. 2010. *Industrial Sociology*. (In process)
7. B. Mohan Kumar and Govind S. Kushwaha. 2010. *Rural Sociology & Educational Psychology*. (In process)

Research Papers in Journals

1. A.K. Gupta, Shruti Chaturvedi and A. K. Sharma. 2009. Arbuscular Mycorrhizal Fungal diversity in Medicinal Plants. *Mycorrhiza News*, 20 (9), 10-13.
2. Ahmad Javed, Arif Mohd., Bhajan Ram, Taj Gohar. 2009. Assessment of Genetic Diversity and Genetic Relationships among Twenty Varieties of *Brasicca juncea* L. using RAPD Markers. *International Journal of Biotechnology & Biochemistry*. Vol:5(1)
3. Anil Kumar, Nidhi Gupta, Atul Kumar Gupta and Vikram Singh Gaur. 2009. Identification of biomarker for determining genotypic potential of nitrogen use efficiency and optimization of the nitrogen inputs in crop plants. *Journal of Crop Sci. Biotech*. 12 (4): 179-190.
4. Arora, Shweta & Prabha Pant. 2009 Grapevine: An Inevitable Communication Network. *Proficient*: An International Journal, Jaipur.
5. Arora, Shweta & Prabha Pant. 2010. Female Migrants in the works of Bharti Mukherjee. *Vidya Megh*. A monthly Journal of Vidya Group. Meerut: Vidya Prakashan Mandir.
6. Arpita Mishra, Dinesh Pandey, V.K. Singh and Anil Kumar. 2009. Molecular cloning and *in silico* analysis of functional homologues of hypersensitive response gene(s) induced during pathogenesis of Alternaria blight in two genotypes of Brassica showing differential resistance (Communicated in *On-Line J of Bioinformatics*).
7. Asha Pandey and Srivastava, R. K 2010. Role of Dendropower in wastewater treatment and sustaining economy. *Journal of Cleaner Production* (In press).
8. Banerjee, T. and Srivastava, R.K. 2009. Application of water quality index for assessment of surface water quality surrounding Integrated Industrial Estate-Pantnagar. *Water Science and Technology*, 60 (8): 2041-2053.
9. Banerjee, T. and Srivastava, R.K. 2009. Estimation of the current status of floral biodiversity at surroundings of Integrated Industrial Estate-Pantnagar, India. *International Journal of Environmental Research*, Vol. 4 (1) 41-48.

10. Banerjee, T. and Srivastava, R.K. 2009. Evaluation of environmental impacts of IIE-Pantnagar through application of air and water quality indices. Environmental Monitoring and Assessment, DOI: 10.1007/s10661-010-1353-3.
11. Banerjee, T., Pandey, A. and Srivastava, R.K. 2009. Study on variable nature of some ground water pollutants at surrounding of Integrated Industrial Estate-Pantnagar. *Journal of Ecophysiology & Occupational Health*, Vol.9, pp. 31-36.
12. Banerjee, T., Srivastava, R.K. 2010. Plastic waste management and resource recovery in India. *International Journal of Environment & Waste Management* (In Press).
13. C.S. Mathela, R.C Padalia, S.C Joshi, K.K. Singh, D.S Bisht, A.K Pant and H Kharkwal. 2009. Chemical Diversity in Himalayan Elsholtzia species. *Chemistry and Biodiversity*. 6 (12): 2217-2226
14. Chauhan, J. S. & Rai, J. P. N., 2009. Phytoextraction of soil cadmium and zinc by microbes-inoculated Indian mustard (*Brassica juncea*). *Journal of Plant Interactions*, 4, 279 — 287.
15. Fuloria, A., Saraswat, S., Rai, J. P. N., 2009. Effect of *Pseudomonas fluorescens* on metal phytoextraction from contaminated soil by *Brassica juncea*. *Chemistry and Ecology*. 25, 385 — 396.
16. G. Nand and M, Kumar, 2009. "Temperature dependence of bulk modulus of minerals using equation of state", *Indian Journal of Pure and Applied Physics* 47, 868.
17. G. Nand and M. Kumar, 2010 "Temperature dependence of second order elastic constants of minerals", *Natural Science*, In Press.
18. G. Nand and M. Kumar, 2010. "Analysis of temperature dependence of thermal pressure of solids", *Indian J. Physics*. In press.
19. Gagan Dixit, Jitendra Pal Singh, R. C. Srivastava, H. M. Agrawal, R. J. Choudhary, V. Ganeshan and Ajay Gupta. 2010. Structural and magnetic behavior of nickel ferrite thin film grown by PLD; *Indian Journal of Pure and Applied Physics* 23
20. Gagan Dixit, Jitendra Pal Singh, R.C. Srivastava, H. M. Agrawal, V. G. Sathe, R. J. Choudhary, and Ajay Gupta. 2010. Annealing effect on the magnetic properties of nickel ferrite thin film; *Surface and Interface Analysis* 42: 151-156.
21. H. Negi, A. Kapri, M.G.H.Zaidi, A. Satlewal, R. Goel. 2009. Comparative In-Vitro biodegradation studies of epoxy and its silicone blend by selected microbial consortia. *International Biodegradation and remediation*. 63: 553-558
22. J M Seneviratne, Atul K. Gupta, Dinesh Pandey, Indu Sharma and Anil Kumar 2009. Determination of genetic divergence based on DNA markers amongst monosporidial strains derived from fungal isolates from Karnal bunt (*Tilletia indica*) of wheat. Plant Pathol. J., 25 (4): 303-316.
23. Jitendra Pal Singh, R. S. Payal, R. C. Srivastava, H. M. Agrawal, Prem Chand, Amita Tripathi and R. P. Tripathi, Effect of thermal treatment on the magnetic properties of nanostructured zinc Ferrite; *Journal of Physics*: Conference Series (Accepted).
24. Jitendra Pal Singh, R.C. Srivastava, H. M. Agrawal and Prem Chand. 2009. Relaxation phenomena in nanostructured zinc ferrite; *International Journal of Nanoscience*, 8, pp.523-531.
25. Jitendra Pal Singh, R.C. Srivastava, H. M. Agrawal and Ravi Kumar, Magnetic behavior of nanosized zinc ferrite under heavy ion irradiation; *Nuclear Instruments Methods in Phys. Res. B.* (in Press)
26. Jitendra Pal Singh, R.C. Srivastava, H. M. Agrawal, Ravi Kumar, V. R. Reddy and Ajay Gupta, Magnetic study of nanostructured zinc ferrite irradiated by 100 MeV oxygen beam; *Journal of Magnetism and Magnetic Materials* (in Press)

27. Joshi, B., Sarika, N. Pandey and P.B. RAO. 2009. Allelopathic effect of weed species extracts on germination, growth and biochemical aspect in different varieties of wheat (*Triticum aestivum* L.). Indian J. Agric. Res. 43 (2): 79 - 87.
28. K Saini Anil Kapri, M.G.H. Zaidi, Reeta Goel. 2009. Comparative biodegradation studies of non poronized and poronized LPPE using microbial consortium. *J. Polymer Environment* (In press)
29. Kapri, A., Zaidi M.G.H. and Goel, R. 2009. Nanobarium titanate as supplement to accelerate plastic waste biodegradation by indigenous bacterial consortia. *In:* American Institute of Physics (AIP) Conference Proceedings, Vol. 1147, 469-474.
30. Kapri, A., Zaidi M.G.H., Satlewal, A. and Goel, R. 2010. SPION-accelerated biodegradation of low-density polyethylene by indigenous microbial consortium. *Int. Biodet. Biodegrad.* (DOI: 10.1016/j.ibiod.2010.02.002).
31. Khan, M., Kumar, Amit and Goel, R. 2010. Comparative Protein Modeling, Prediction of Conserved Residue and Active Sites in Cold Resistant Protein Isolated from $CRPF_1$, A Cold Tolerant Mutant of *Pseudomonas fluorescens. Curr. Microbiol.* DOI 10.1007/s00284-009-9560-2.
32. Kumar R., Om Prakash, A.K. Pant, S.K. Hore, C.S. Chanotiya and C.S. Mathela 2009. Compositional variation and anthelmentic activity of essential oils from rhizomes of different wild populations of Acorus calamus L and its major component, β-asarone. *Nat Prod Comm*. 4(2):275-278 (2009)
33. Kumar S., Friebe B. And, Gill B.S. (2009) Fate of *Aegilops speltoides*-derived, repetitive DNA sequences in diploid *Aegilops* species, wheat-*Aegilops* amphiploids and derived chromosome addition lines. *Cytogenetic and Genome Research* (Accepted)
34. Lohani, S., Pal, R., Rai, J.P.N. & Nadiger, S., 2009. Changes in soil physico-chemical, enzymatic and microbial properties after remediation of brass and electroplating industry effluent fed soil with Brassica juncea. *Biosciences, Biotechnology Research Asia* 5, 679-683.
35. M. K. Gupta, Sneh Narwal, V. Umapathy, Rakesh Mal, and Anil Kumar (2009) Characterization of potential antigen(s) of *T. indica* teliosporic walls to develop specific immunoassay for Karnal bunt detection. *Food and Agricultural Immunology*, 20, 2: 79-94.
36. M.G.H. Zaidi, P.L. Sah, S. Alam and A.K. Rai. 2009. Synthesis of epoxy ferrite nanocomposites in supercritical carbon dioxide. *Experimental Nanoscience*. 4(1): 55-66
37. Manoj Kumar, Uma D. Sharma and M. Kumar, 2010. "Thermal expansivity of HCP iron and MgSiO3 at high pressure and temperature", *High Temperature-High Pressure.* In Press.
38. Manoj Nath, Anshita Goel and Anil Kumar. 2009. Molecular cloning and *in silico* comparative analysis of calmodulin from cereals and millets (Communicated to On-Line *Journal of Bioinformatics*)
39. N. Mehrotra, Shishir Tandon, S. Kanaujia and N. K. Sand. 2009. Estimation of chlorpyrifos in its formulation by Reverse phase HPLC. (Accepted in *Indian Journal of Plant Protection*)
40. Negi, H.; Kapri, A.; Zaidi, MGH and Goel, R. 2009. Comparative in-vitro biodegradation studies of Epoxy and its silicone blend by selected microbial consortia. *Int. Biodet. Biodg.* doi:10.1016/j.ibiod.2009.03.001.
41. Pal, R. *&* Rai, J. P. N., 2009. Metal sorption from aqueous solutions by *Kluyveromyces marxianus*: Process optimization, equilibrium modeling and chemical characterization. *Biotechnology. Journal.* 4, 1471-1478.

42. Pal, R. & Rai, J. P. N., 2010. Phytochelatins: Peptides Involved in Heavy Metal Detoxification. *Applied Biochemistry & Biotechnology* 160:945–963.
43. Pant, Prabha and Anita Parihar. 2009 Narrative Technique and Style in the Novels of Shashi Deshpande. *Journal of English Literature and Language*. Jalandhar: Dixit Publishing House. 43-52.
44. Pant, Prabha and Anita Parihar. 2009. Small Remedies: Bold and Assertive Women. *Journal of Technical Teachers*: An International Journal of Technology, Management and Applied Sciences. Dehradun. 30-32.
45. Pant, Prabha and Anita Parihar. 2009. Traditionalism to Modernism: Shashi Deshpande's Feminism.Vol.8 No.2 *Re-Markings*, Agra.
46. Pant, Prabha and Shweta Arora. 2009 A Modern Women in Indian Society: Challenges they Face. *Vidya Megh*. A monthly Journal of Vidya Group. Meerut: Vidya Prakashan Mandir.Ltd., 37-38
47. Pathak J. and Srivastava R. K. 2009. Food Industry Treatment: An Advance Anaerobic Method. *Asian Journal of Water, Environment and Pollution*, Vol.6, No. 3, PP. 67-71.
48. Preety Panwar, Manoj Nath, Vijay Kumar Yadav and Anil Kumar. 2009. Comparative evaluation of genetic diversity using RAPD, SSR and Cytochrome P_{450} gene based markers with respect to calcium content in finger millet (*Eleusine coracana L. Gaertn*.) (Accepted in *J. of Genetics*)
49. Prema Latha, K.; Soni, R.; Khan, M.; Marla, S.S. and Goel, R. 2009. Exploration of *csp gene(s)* from temperate and glacier soils of Indian Himalaya and *in silico* analysis of encoding proteins. *Current Microbiol.* 58 (4): 343-348. DOI 10.1007/s00284-008-9344-0.
50. R. C. Srivastava ; Jitendra Pal Singh, H. M. Agrawal, Ravi Kumar, Amita Tripathi, R. P. Tripathi, V. R.Reddy and Ajay Gupta, 57 Fe Mössbauer investigation of nanostructured zinc ferrite irradiated by 100 MeV Oxygen beam; *Journal of Physics: Conference Series* (in Press).
51. R. Kumar, Uma D. Sharma and M. Kumar, 2010 "Nanomaterials under high temperature high pressure," *Modern Physics Letters B*. Accepted.
52. Rahul Kumar, Ravindra Taware, Vikram S. Gaur, S.K. Guru and Anil Kumar. 2009. Influence of nitrogen inputs on the expression of Dof transcription factor in wheat and its relationship with photo synthetic and ammonium assimilating efficiency. *Molecular Biology Reports*, 36, 8: 2209-2220
53. Rajput, P., Sarika, N. Pandey and P.B. RAO. 2010. Bioherbicidal potential of selected paddy straw extracts on germination, growth and protein in four weed species. Proc. Nat. Acad. Sci. India. (In Press).
54. Raju, Anjana Srivastava and P.C. Srivastava. 2009. Fate of benfuracarb Insecticides in mollisols and brinjal crops *Bull. Environ. Cont. & Toxicol*. 83: 348-351.
55. Rani, A.; Shouche, YS. and Goel, R. 2009. Comparative assessment of *in situ* bioremediation potential of cadmium resistant acidophilic *Pseudomonas putida* 62BN and alkalophilic *Pseudomonas monteilli* 97AN strains on soybean. *Int. Biodet. Biodg.* 63, 62-66.
56. Rashmi Srivastava, Abdul Khalid, U.S. Singh and A.K. Sharma. 2010. Evaluation of arbuscular mycorrhizal fungus, fluorescent *Pseudomonas* and *Trichoderma harzianum* formulation against fusarium oxysprum f. sp. lycopersici for the management of tomato will. *Biological Contorl*, 53, 24-31.
57. Rashmi Srivastava, Michel Aragno and A. K. Sharma. 2010. Cow Dung Extract: A medium for the growth of pseudomonads enhancing their efficiency as biofertilizer and biocontrol agent in rice. *Indian Journal of Microbiology* (Accepted).

58. Rashmi Srivastava, S. K. Sharma, J.P. Singh and A. K. Sharma. 2009. Evaluation of tomato (Solanum lycopersicum L.) germplasms against Fusarium oxysporum f.sp. lycopersici, causing wilt. *Pantnagar Journal of Research*, 7(2), 192-195.
59. Rawat, D.S. 2009. A presumed extinct endemic alpine herb Gentiana tetrasepala rediscovered after 123 years: will it survive? *Natl. Acad. Sci. Let*.32:169-172.
60. Rawat, D.S. 2009. Dipcadi Medik (Liliaceae): A disappearing genus in India, *Natl. Acad. Sci. Let*. 32 (7&8): 211-212.
61. Rawat, D.S., 2010. Online herbaria or nation flora: what is needed first? *Curr. Sci.* 97: 1706-1707.
62. Rawat, D.S., Singh, H. and Rana C.S. 2009. New distributional records of Dicranostigma lactucoides and Dipcadi serotinum. *J Econ. Tax. Bol* 33, 32-34
63. Rekha Bisht, Shruti Chaturvedi, Rashmi Srivastava, and A.K. Sharma, B.N. Johri. 2009. Effect of arbuscular mycorrhizal fungi, *Pseudomonas* fluorescens and Rhizosphere leguminosarum on the growth and nutrient status of *Dalbergia sissoo* Roxb. *Tropical Ecology* 50 (2), 231-242.
64. S Joshi, Om Prakash and A.K Pant. 2010. Chemical composition, antioxidant and antimicrobial activities of *Alpinia nutans*. *Journal of Essential Oil Research*. 22: 85-90
65. S. Vishnoi, V Agarwal and V.K. Kasana. 2009. Synthesis and structure activity relationship of substituted cinnamic acids and amide analogues: A new class of herbicides. *J. Agric Food Chem.* 57(8) 3261-3265.
66. Sah, A., Kapri A., Zaidi, M.G.H., Negi, H. and Goel R. 2010. Implication of Fullerene-60 upon *in-vitro* LDPE biodegradation. *J. Microbiol. Biotechnol. Vol 20(05), (doi:10.4014/jmb.0910.10025).*
67. Saraswat, S., & Rai, J. P. N. 2010 Heavy metal adsorption from aqueous solution using *Eichhornia crassipes* dead biomass. *International Journal of Mineral Processing*. In press.
68. Saraswat, S. & Rai, J. P. N. 2009. Phytoextraction potential of six plant species grown in multimetal contaminated soil. *Chemistry & Ecology.* 25, 1-11.
69. Saraswat, S., & Rai, J. P. N. 2010. Prospective application of *Leucaena leucocephala* for phytoextraction of Cd and Zn and nitrogen fixation in metal polluted soils. *International Journal of Phytoremediation* (In press).
70. Sarika, Pandey, N. and P. B. RAO. 2010. Response of different weed species extracts on seed germination, protein content and its banding pattern in different varieties of wheat. Comm. to *J. Indian Bot. Soc*.
71. Satyawali, Y., Pant, D., Singh, A. and Srivastava, R. K. 2009. Treatment of rayon grade pulp drain effluent by upflow anaerobic fixed packed bed reactor (UAFPBR). *Journal of Environmental Biology*, Vol. 30, No. 5, pp. 667-672.
72. Shahi, G., S. Rawat, Y.S. Rawat and P. B. RAO 2010. Effect of certain environmental factors on germination and seedling growth of four selected medicinal plant species of Tarai region, Uttarakhand. *Pantnagar Journal of Research*. (In Press).
73. Shalini Purwar, U.S. Singh, Soma S. Marla and Anil Kumar 2009 Basal expression studies of cystatin gene families of wheat for defining their role in genotype and stage specific immunity against Karnal bunt. *Molecular Biology Reports*, 36
74. Shishir Tandon, A K Mittal and A K Pant. 2009. Growth regulatory activity of Trichellia connoroides Wright and Arn. (Syn Haynea trijuga Roxb) leaf extracts against bihar hairy caterpillar (Spilosoma obliqua Walker). *International Journal of Tropical Agriculture* 29: 180-184

75. Shishir Tandon, A. Singh and S. Kanaujia. 2009. Effect of Gamma radiation on growth and development of rust red flour beetle Tribolium castaneum (Herbst.) *Journal of Plant Protection Research* (Poland). 49(3): 280-282.
76. Shishir Tandon, A.K. Mittal and A. K. Pant. 2009. Antifeedant activity of some essential oils against Spilosoma obliqua Walker (Lep: Arctiidae). *Ind. J Crop Sci*. (Accepted)
77. Shishir Tandon, P Jayamurthy and RC Sawhney. 2009. Fatty acid composition of leaf oil of seabuckthorn collected from lehregion. *Global Seabuckthorn Research and Development*.1(7)41-43
78. Shubhra Singh, Ashutosh Dubey, Lakshmi Tewari & A. K. Verma, 2009. Microbial profile of stored jaggery: A traditional Indian sweetner. *Sugar Tech* (112): 213-1216.
79. Singh, C., Soni, R., Jain, S., Roy, S., and Goel, R. 2010. Study of Nitrogen Fixing Bacterial Community using nifH gene as a biomarker in different geographical soils of Western Indian Himalayas. *Journal Environ. Biol.* 31(4/5).
80. Singh VV, Singh SB and Goel, CK. 2009. a) Reliability analysis of a computer lab connected to a server; b) Reliability modeling of internet data centre. *International Journal of Mathematical Sc. & Engg. Application.* Vol. 3 (IV), pp.17-21 and 231-244.
81. Soma Marla, Deeksha Bharatiya, Madhu Bala, Vinay Singh and Anil Kumar. 2010. Classification of rice seed storage proteins using neural networks. *Journal Biochemistry & Biotechnology*, 19 (1)
82. Soni, R., Kapri, A., Zaidi M.G.H. and Goel, R. 2009. Comparative biodegradation studies of non-poronized and poronized LDPE using indigenous microbial consortium. *J. Polym. Environ. 17(4):233-239. DOI 10.1007/s10924-009-0143-x.*
83. Sriparna Dutt, V.K Singh, Soma S Marla and Anil Kumar. 2009. In silico determination of sequential, structural and functional diversity of wheat cystatins and its implication in plant defense. *Genomics, Proteomics & Bioinformatics* (Accepted)
84. Srivastava, A, Pant, R, Bhatia, G. and Bali Ram (2009) Harvest Time Residue of Benfuracarb in Paddy and Soil by HPLC. *EJEAFChe*, Spain (accepted).
85. Srivastava, Anjana, Gunjan Bhatia and P.C. Srivastava (2009) Biofficacy and Residue Studies of N-Atca in Rice Crop Under Sub-Tropical Conditions. *Jr.of Food Agric. & Environment* (Finland) 7(3&4) (In Press).
86. Tandon,S. Dubey A, and Verma, A.K. (2009) Cordyceps sinesis (BerK) Saac,: A Medicinal Mushroom, *Indian Farmers' Digest* Page 34-36
87. V. Agarwal, MGH Zaidi, AK Rai and S Alam. (2009). Polymeerization of Acrylic acid in presence of fullarance 60 in super critical carbon dioxide. *Int. J. Polymer analysis and Charact.* 14(1): 52-67
88. V. Agarwal, MGH Zaidi, S Vishnoi, S Alam and AK Rai. 2009. Fullerene mediated polymerization of polyacrylic acid in super critical CO2. *International J Polymer analysis and Charterisation.* 19(1), 57
89. Vasudevan, P., Thapliyal, A., Srivastava, R.K., Pandey, A., Dastigar, M.G. and Davis, P. (2010) Fertigation potential of domestic wastewater for tree plantations. *Journal of Scientific Industrial Research*, Vol. 69, pp. 146-150.
90. Vijay K. Tiwari, Nidhi Rawat, Kumari Neelam, Sundip Kumar, Gursharn S. Randhawa, Harcharan S. Dhaliwal. 2010. Substitution of 2S and 7U chromosomes of *Aegilops kotschyi* in wheat enhances grain iron and zinc concentration. *Theoretical and Applied Genetics*
91. Vikas Chandra Gupta, J P Jaiswal, Indu Sharma and Anil Kumar. 2009. Investigating the role of cystatin in conferring stage dependent resistance against Karnal bunt of wheat. *Food and Agricultural Immunology*

92. Vinay Kumar Singh., Sonu Ambwani, Soma S. Marla and Anil Kumar. 2009. Development of Cry-Bt identifier, *Bioinformation*, 4 (5): 182-183 ISSN 0973-2063 (online) 0973-8894 (print)
93. Yadav, R., Banerjee, T. and Srivastava, R.K. (2009) Role of organic adsorbents in removal of arsenic (III) and chromium (VI). *Pollution Research*, Vol.28, No.2, pp. 251-256.
94. Joshi, Rohit, Shukla, Alok, Mani, S.C., Kumar, Pramod. 2010. Hypoxia induced non-apoptotic cellular changes during aerenchyma formation in rice (Oryza sativa L.) roots. *Physiol.Mol.Biol.* 16:1(press) (Springer)
95. Bahuguna,R.N.,Pandey,M.,Nath,M.,Guru,S.K.,Kumar,J.,Shukla,Alok.2009.Physiolog ical evaluation of Trichoderma harzianum against sheath blight in rice (Oryza sativa L.) *Indian Journal Plant Physiology* 14:2 Online ISSN: 0974-0252
96. Joshi Rohit,Mani,S.C.,Shukla,Alok and Pant,R.C.2009. Aerobic Rice: Water Use Sustainability.*Oryza* 46:1-5
97. Krishnan Anitha Gomathi Nailwal, Tapan Kumar, Shukla Alok and Pant Ramesh Chandra.2009. Mango (Mangifera indica. l) malformation an unsolved mystery *Researcher* 1(5):20-36 (Marshland Press,USA,)
98. Joshi, Rohit, Shukla, Alok, Kumar, Pramod.2009.In vitro flowering in hill maize.A novel technique for future. *Indian Journal of Plant Physiology* 14:299-302
99. Joshi Rohit Nailwal, Tapan K. Tewari Lalit M. and Shukla, Alok .2009. Exploring Biotechnology for Conserving Himalayan Biodiversity. *Researcher*, 1(3):36-45 (Marshland Press,Newyork,USA)
100. Bains, Gurdeep, Kumar, Amutha Sanpath, Rudeappa, Thunaraju, Altf, Emily, Hamson, Thomas, E., Bais, Harsh P..2009. Native plants are microbial contribution to a negative plant plant interaction .*Plant Physiology*, 10.1104/pp.109.146407.

Book Chapters

1. Anil Kumar, Alok Gupta and Dinesh Pandey (2009).Padap vikas evam vridhi niyantrak. In *Padap vridhi niyantrak: kya kyun aur kaise* (Edited by Anil Kumar, Ranjan Srivastava and B.R. Singh). University Publications, pp 1-20.
2. Ashish Kumar, Susheel Kumar, Rashmi Srivastava and A. K. Sharma (2009) Fungal biocontrol agent (BCAs) and their metabolites. In *Agriculture Diversification: Problems and Perspectives*. (Eds. A. K. Sharma, Seema Wahab and Rashmi Srivastava). I.K. International Publishing House, New Delhi, 45-57.
3. Dinesh Pandey and Anil Kumar. (2009). *Padap harmono evam jaiv rasayano dwara ekikrit padap suraksha prabandhan*. In *Padap vridhi niyantrak: kya kyun aur kaise* (Eds Anil Kumar, Ranjan Srivastava and B.R. Singh). University Publications, pp 149-157.
4. Lakshmi Tewari & Jitendra Saini, 2009. Trichoderma: *Padap udpadakta badhane wala ek prabhawashali jaiv niyantrak*. In *Padap vridhi niyantraka: kya, kyuon aur kaisey*? Eds Anil Kumar, Ranjan Srivastava, B.R. Singh, University Publications, Pantnagar, 198-216.
5. R.S. Sengar, B.R. Singh, Reshu Choudhary and Kalpana Sengar. 2009. *Bradhi Niyantrak: Krishi Vikash Me Yogdan* in *Padap Vridhi Niyantrak: Kya, Kyon aur Kaise*? pp 71-111
6. Rani, A, and Goel, R. 2009. Strategies for Crop Improvement in Contaminated Soils Using Metal Tolerant Bioinoculants. In *Microbial Strategies for crop improvement* (ed.) M. S. Khan et al.DOI:10.1007/978-3-642-01979-1_5,@Springer-Verlag Berlin Heidelberg .

7. Rani, A. and Goel, R. 2009. *In situ* bioremediation effect of *Pseudomonas putida* KNP9 strain on cadmium and lead toxicity *In*: *Biotechnology Emerging Trends*, (ed.) R.Z. Sayyed and A.S. Patil, Scientific publisher, Jodhpur, India. 379-384.
8. Rashmi Srivastava, Mamta Joshi, Ashish Kumar, Saurabh Pachauri and A. K. Sharma (2009) Biofertilizers for sustainable agriculture. In *Agriculture Diversification: Problems and Perspectives*. (Eds. A. K. Sharma, Seema Wahab and Rashmi Srivastava). I.K. International Publishing House Pvt. Ltd., New Delhi, 58-73.
9. Satlewal, A. and Goel, R. 2009. Plastics: Applications, ecological impacts and bioremediation strategies. In *Biotechnology Emerging Trends*, (ed.) R.Z. Sayyed and A.S. Patil, Scientific Publisher, Jodhpur, India. 363-378.
10. Satlewal, A., Goel, R. and Garg, GK. 2010. Industrially Useful Microbial Bioresources. In: *Industrial Exploitation of Microorganisms*. (ed.) DK Maheshwari, R.C. Dubey, R. Saravanamuthu. I.K. International Publication Ltd. New Delhi. Pp. 390-405.
11. Shruti Chaturvedi and A. K. Sharma (2010) Role of mycorrhiza as biofertilizer in agariculture. In: *Agriculture Diversification: Problems and Perspectives*. (Eds. A. K. Sharma, Seema Wahab and Rashmi Srivastava). I.K. International Publishing House Pvt. Ltd., New Delhi, 74-80.
12. Singh, Vir and Bohra, B. 2010. Dairy Farming in Himalayan Agro-ecosystem Setting: Farmers' Articulation of Traditional Knowledge in Livestock-based Livelihoods in Uttarakhand, India. In Joshi, N.K. and Singh, V. (eds.) *Traditional Ecological Knowledge of Mountain People: Foundations for Sustainable Development in the Hindu Kush-Himalayan Region* Daya Publishing House, New Delhi, 14-34.
13. Singh, Vir and Gaur, R.D. 2010. Traditional Management of Range Resources: Mountain Farmers' Ecological Tactics in the HKH Region. In Joshi, N.K. and Singh, V. (eds.) *Traditional Ecological Knowledge of Mountain People: Foundations for Sustainable Development in the Hindu Kush-Himalayan Region* Daya Publishing House, New Delhi, 204-223.
14. Singh,Vir and Joshi, N.K. 2010. Farmers' Management of Natural Resources for Livelihoods in the Mountains: Valuing Traditional Knowledge and Strategies in the Hindu Kush-Himalayan Region. In Joshi, N.K. and Singh, V. (eds.) *Traditional Ecological Knowledge of Mountain People: Foundations for Sustainable Development in the Hindu Kush-Himalayan Region* Daya Publishing House, New Delhi, 92-120.
15. Srivastava, Rashmi; Chaturvedi, Shruti Chaturvedi, Preeti and Sharma, A.K. (2009) Arbuscular mycorrhizal fungi: A unique organisms of potential implications for carbon sequestration. In *Agriculture Diversification: Problems and Perspectives*. (Eds. A. K. Sharma, Seema Wahab and Rashmi Srivastava). I.K. International Publishing House Pvt. Ltd., New Delhi, pp. 173-186.
16. Vinay Singh, Soma S. Marla, Anil Kumar (2009) "Bioinformatics Application To Crop Improvement" E-Book Chapter entitled, *Signatory Biomolecules of Domains Eubacteria and Archaea* in pilot project of MHRD, IGNOU (www.sakshat.ac.in; http://202.141.40.218/wiki/index.php/Signatory, Biomolecules of Domains in Eub-acteria and Archaea)

Annexure -IV

List of Equipments purchased/ Installed during the year

1.	MBGE	Dr. Anil Kumar	Biologic Duoflow/D system with accessories	US $ 20,150.00
2.	Environmental Science	Dr. Uma Malkania	CHN Analyzer with accessories	US $ 44,000.00
3.	MBGE	Dr. Soma Marla	Bioinformatics Software	US $ 5,000.00
4.	Microbiology	Dr. Reeta Goel	Sigma3-30K Super High Speed Refrigerated Table Top Centrifuge with accessories	EURO 7,895.00
5.	Plant Physiology	Dr. Alok Shukla	Electrophoresis Apparatus with power supply	US $ 5,668.00
6.	Plant Physiology	Dr. Alok Shukla	Sigma 3-18K High Speed Refrigerated Table Top Centrifuge with accessories	EURO 6,620.00
7.	Plant Physiology	Dr. Alok Shukla	Laminar Flow Clean Bench with accessories	US $ 4,000.00
8.	Microbiology	Dr. Reeta Goel	Premium Upright Freezer model 4410 with accessories	GBP 6,043.53
9.	Chemistry	Dr. MGH Zaidi	incubator Innova Co. 48 with accessories	GBP 3,189.41
10.	Chemistry	Dr. MGH Zaidi	photo Reactor System with accessories	US$ 7,111.60
11.	MBGE	Dr. Anil Kumar	personal Incubator with accessories	US $ 6,332.70
12.	MBGE	Dr. Anil Kumar	personal Incubator with accessories	US $ 2,866.15
13.	Environmental Science	Dr. Uma Malkania	Atomic Absorption Spectrophotometer with accessories	US $ 21,900.00
14.	MBGE	Dr. Anil Kumar	Nanodrop Technologies Spectrophotometer with accessories	US $ 22,000.00
15.	Physics	Dr. H.M. Agrawal	X-Ray Structure Analysis & Super Conductivity Apparatus	EURO 12,635.66