

## EVALUATIVE REPORT OF THE DEPARTMENT OF MYCOLOGY & PLANT PATHOLOGY

1. Name of the Department : **Mycology & Plant Pathology**
2. Year of establishment : **1967**
3. Is the Department part of Faculty of the university: **Yes**
4. Names of Programmes / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters: Integrated Ph.D., etc.) : **UG, PG and Ph.D. Programme**
5. Interdisciplinary courses and departments involved : **N.A.**
6. Courses in collaboration with other universities, industries, foreign institutions, etc. : **Nil**
7. Details of programmes / courses discontinued, if any, with reasons : **N.A.**
8. Annual/ Semester/Choice Based Credit System : **Semester System**
9. Participation of the department in the courses offered by other departments : **Yes**
10. Number of teaching posts sanctioned and filled (Professors/Associate Professors/Asst. Professors)

	Sanctioned	Filled
Professor	<b>1</b>	<b>1</b>
Associate Professors	<b>4</b>	<b>2</b>
Asstt. Professors	<b>7</b>	<b>4</b>
Asstt. Professor cum Jr. Pathologist	<b>2</b>	<b>2</b>

11. Faculty profile with name, qualification, designation and specialisation (D.Sc./D.Litt./Ph.D./M.Phil., etc.) :

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D. students guided for the last 4 years
Dr. J.S. Srivastava	Ph.D.	Professor	Plant Bacteriology	31	1
Dr. R. Chand	Ph.D.	Professor cum Plant Pathologist	Pulse Pathology	19	2
Dr. Asha Sinha	Ph.D.	Professor	Seed Pathology	31	4
Dr. H.B. Singh	Ph.D.	Professor	Biological	6	1

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D. students guided for the last 4 years
			Control		
Dr. R.C. Ram	Ph.D.	Associate Professor	Mushroom Fungi	14	Nil
Dr. S.S. Vaish	Ph.D.	Assistant Professor cum Jr. Pathologist	Phyto-nematology	6	Nil
Dr. B.K. Sarma	Ph.D.	Assistant Professor	Pulse Pathology	10	2
Dr. V. Singh	Ph.D.	Assistant Professor	Rice Pathology	6	Nil
Dr. R.K. Singh	Ph.D.	Assistant Professor cum Jr. Pathologist	Phyto-nematology	6	Nil

12. List of senior Visiting Fellows, faculty, adjunct faculty, emeritus professors : **Nil**

13. Percentage of classes taken by temporary faculty – programme-wise information : **Nil**

14. Programme-wise Student Teacher Ratio:

UG	PG	Ph.D.
<b>20:1</b>	<b>33:9</b>	<b>23:9</b>

15. Number of academic support staff (technical) and administrative staff: sanctioned and filled

Sanction of Non-Teaching Post

	Sanctioned	Filled
S.T.A.	<b>2</b>	<b>Nil</b>
Lab. Asstt.	<b>3</b>	<b>2</b>
Lab. Attendant	<b>2</b>	<b>2</b>
Clerk	<b>1</b>	<b>1</b>

16. Research thrust areas recognized by funding agencies: **N.A.**

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies and grants received project-wise.

**International :**

S.No	Title of Project (s)	Year	Amount (Lacs)	Funding agency
1.	Spot blotch of wheat: Delivering resistant wheat lines and diagnostic and molecular markers for resistance	2012-2015	3,62,600 USD	CGIAR (CIMMYT)
2.	Deciphering phytohormone signaling in modulation of resistance to spot blotch disease for identification of module resistance component wheat improvement.	2012-2015	45,000 USD	CGAIR

**National :**

S.No	Title of Project (s)	Year	Amount (Lacs)	Funding agency
1	Popularization of biopesticides based on <i>Trichoderma</i> spp. among SC/ST farmers of Lucknow and Barabanki Districts by training-cum-field demonstration.	2005-09	20.98	DBT, New Delhi
2	Field Evaluation of bioefficacy of Biofertilizer (Products) Kit in Paddy	2008-09	0.50	IPM Biocontrol Labs Pvt. Ltd. Hyderabad
3	Field Evaluation of bioefficacy of Biofertilizer (Products) Kit in Potato	2008-09	0.50	IPM Biocontrol Labs Pvt. Ltd. Hyderabad
4	Training cum field demonstration of seed treatment with bioagents as an Important Component of IPM Practices for economically important crops of Uttar Pradesh	2008-11	88.54	Macro Management of Agriculture Ministry of Agriculture and Cooperation, New Delhi
5	Promoting bio-farming and IPM Practices in Eastern Uttar Pradesh through Training cum field Demonstration Under Participatory Approach	2008-11	101.80	Macro Management of Agriculture Ministry of Agriculture and Cooperation, New Delhi
6	Establishment of Plant Health Clinic	2009-10	20.00	NIIM-UPCAR National Horticulture Mission, New Delhi
7	Modulating biofarming oriented rural livelihood through biotechnological approach-based	2009-12	21.31	DST, New Delhi

	microenterprising among farmers by training-cum-field				
8	Promotion of Agriculturally important micro-organism for draught tolerance and biocontrol in some important crops of Uttar Pradesh	2010-13	76.00	Macro Management of Agriculture Ministry of Agriculture and Cooperation, New Delhi	
9	Sustainable farming system to RKVY improve soil health	2010-12	81.00	RKVY	
10	Development of microbial consortium for plant growth promotion and biological control in legumes.	2009-12	39.00	DBT, New Delhi	
11	Genetic and biochemical analysis of Pseudomonas-Trichoderma mediated induction of resistance in pea	2010-13	34.00	DST, New Delhi	
12	Demonstration and dissemination of organic farming protocols for vegetable crops in a participatory rural appraisal mode	2010-12	8.96	NHM-UPCAR National Horticulture Mission, New Delhi	
13	Production of organic fertilizer by decomposition of kitchen and agricultural wastes using efficient microbial consortia	2010-13	8.41	DST, New Delhi	
14	Field evaluation of azoxystrobin 23% SC for the control of anthracnose and powdery mildew of Mango	2011-13	1.65	Dhanuka Limited	Agritech
15	Field evaluation of azoxystrobin 23% SC for the control of fruit rot and powdery mildew of Chilli	2011-13	1.65	Dhanuka Limited	Agritech
16	Field evaluation of azoxystrobin 23% SC for the control of early and late blight of Tomato	2011-13	1.65	Dhanuka Limited	Agritech
17	Production of organic fertilizer by decomposition of Kitchen and agricultural wastes using efficient microbial consortia	2011-2013	8.41	DST	
18	Production cum demonstration of Microbial enriched manure-INM Technology for wheat	2011-2013	2.05	RKVY	
19	Decomposition of green manure by soil mycoflora.	2008-2011	5.39	UGC	
20	Role of melanin inhibitors on the pathogenic fitness of <i>Bipolaris sorokiniana</i> .	2011-14	20.0	CSIR	
21	Screening of Turcicum blight resistance in indigenous non elite lines of maize.	2011-14	8.81	DBT	
22	Outreach programme on " Diagnosis and Management of Leaf spot Disease of Field and Horticultural Crops	2009-12	35.60	ICAR	
23	Role of melanin in reproductive biology of <i>Bipolaris sorokiniana</i> .	2009-12	7.71	UGC	
24	Evaluation of Azoxystrobin 7.5%	2011	0.6	Makhteshim - Agan	

	+Propiconazole 12.5% SE against sheath blight in Rice.			India Pvt. Ltd.
25	Evaluation of Bupirimate 25% EC against and Powdery Mildew in Roses	2011	0.6	Makhteshim – Agan India Pvt. Ltd.
26	Evaluation of Bio -efficacy and phytotoxicity evaluation of Evaluation of Azoxystrobin 23% SC against Fruit Rot and Powdery Mildew in Chilli.	2011-12	0.6	Makhteshim – Agan India Pvt. Ltd.
27	Evaluation of Bio -efficacy and phytotoxicity evaluation of Evaluation of Azoxystrobin 23% SC against early and late blight of potato.	2011-12	0.6	Makhteshim – Agan India Pvt. Ltd.
28	Evaluation of Bio -efficacy and phytotoxicity evaluation of Evaluation of Azoxystrobin 23% SC against early and late blight of tomato.	2011-12	0.6	Makhteshim – Agan India Pvt. Ltd.
29	Evaluation of Bio- efficacy and phytotoxicity evaluation of Evaluation of Azoxystrobin 23% SC against anthracnose and powdery mildew of in mango.	2011-12	0.6	Makhteshim – Agan India Pvt. Ltd.
30	Field evaluation of azoxystrobin 23% Sc for the control of anthracnose and powdery mildew of Mango	2011-2013	1.65	Dhanuka Agritech Limited
31	Field evaluation of azoxystrobin 23% Sc for the control of fruit rot and powdery mildew of Chilli	2011-2013	1.65	Dhanuka Agritech Limited
32	Field evaluation of azoxystrobin 23% Sc for the control of early and late blight of Tomato	2011-2013	1.65	Dhanuka Agritech Limited
33	Field Evaluation of bioefficacy of Biofertilizer (Products) Kit in Paddy	2008-09	0.5	IPM Biocontrol Labs Pvt. Ltd. Hyderabad
34	Field Evaluation of bioefficacy of Biofertilizer (Products) Kit in Potato	2008-09	0.5	IPM Biocontrol Labs Pvt. Ltd. Hyderabad
35	Training cum field demonstration of seed treatment with bioagents as an Important Component of IPM Practices for economically important crops of Uttar Pradesh	2008-11	88.54	Macro Management of Agriculture Ministry of Agriculture and Cooperation, New Delhi
36	Promoting bio-farming and IPM Practices in Eastern Uttar Pradesh through Training cum field Demonstration Under Participatory Approach	2008-11	101.80	Macro Management of Agriculture Ministry of Agriculture and Cooperation, New Delhi
37	Establishment of Plant Health Clinic	2009-10	20.00	NHM-UPCAR National Horticulture Mission, New Delhi
38	Modulating biofarming oriented rural livelihood through biotechnological approach-based microenterprising among farmers by training-cum-field	2009-12	21.31	DST, New Delhi

39	Promotion of Agriculturally important micro-organism for draught tolerance and biocontrol in some important crops of Uttar Pradesh	2010-12	76.00	Macro Management of Agriculture Ministry of Agriculture and Cooperation, New Delhi
40	Sustainable farming system to RKVY improve soil health	2011-13	81.00	RKVY
41	Demonstration and dissemination of organic farming protocols for vegetable crops in a participatory rural appraisal mode	2010-12	8.96	NHM-UPCAR National Horticulture Mission, New Delhi
42	Production of organic fertilizer by decomposition of kitchen and agricultural wastes using efficient microbial consortia	2010-13	8.41	DST, New Delhi
43	Diversity in edible fungi	2008-11	4.80	CSI
44	Mushroom Cultivation to SC/ST Farmer	2012	11.85	D.B.T., New Delhi
45	Molecular mapping of QTLs for early blight resistance in tomato	2012-15	42.96	DST, New Delhi
46	Biodiversity and distribution of nematophagous fungi from different ecological habitats	2012-14	10.0	UGC New Delhi
47	Production of organic fertilizer by decomposition of kitchen and agricultural wastes using efficient microbial consortia	2010-2013	8.41	DST, New Delhi
48	Production cum demonstration of microbial enriched manure from agricultural waste for development of INM Technology to boost wheat production in Eastern U.P.	2010-2012	10.2	RKVY

18. Inter - institutional collaborative projects and grants received

a. All India collaboration (b) International

S.No	Title of Project (s)	Year	Amount (Laacs)	Funding agency
1.	Spot blotch of wheat: Delivering resistant wheat lines and diagnostic and molecular markers for resistance	2012-2015	3.62,600 USD	CGIAR (CIMMYT)
2.	Deciphering phytohormone signaling in modulation of resistance to spot blotch disease for identification of module resistance component wheat improvement.	2012-2015	45,000 US#	CGAIR

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, etc.:  
total grants received.

**DBT Project**

PI. or Co-PI/ Associated Scientist	Title of Project (s)	Year	Amount (Lacs)	Funding agency
Dr. B. K. Sarma	Development of microbial consortium for plant growth promotion and biological control in legumes.	2009- 2012	39.7	DBT, New Delhi
Dr. R. C. Ram	Mushroom Cultivation to SC/ST Farmer	2012	11.85	D.B.T., New Delhi
Prof. Ramesh Chand	Screening of Turcicum blight resistance in indigenous non elite lines of maize	2011 - 2014	8.81	D.B.T., New Delhi

20. Research facility / centre with

- state recognition : **Mushroom Spawn Production, Plant Health Clinic**
- national recognition : Nil
- international recognition: Nil

21. Special research laboratories sponsored by / created by industry or corporate bodies : Nil

22. Publications: 164

- \* Number of papers published in peer reviewed journals (national / international) : 126  
(See details in Annexure I)
- \* Monographs : Nil
- \* Chapters in Books: 38 (See details in Annexure II)
- \* Edited Books : 2
- \* Books with ISBN with details of publishers:
  - i. Microbial Biodiversity of natural Ecosystem (ed. A. Sinha, B.K. sarma, M. Srivastava), ISBN 978-81-7622-259-4, Biotech Books, New Delhi
  - ii. Biology and Control of *Sclerotium rolfsii* (U.P. Singh, B.K. Sarma), ISBN 978-3-639-19909-3, VDM Verlag, Saarbruecken, Germany
- \* Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.):
- \* Citation Index - range / average: **Range 150-270/ Average 7.5**

- \* SNIP
- \* SJR
- \* Impact Factor (NAAS) - range / average : **Range 6-8.5/ Average 7.0**
- \* h-index : 11

23. Details of patents and income generated :

A process for producing reusable granular formulation of formulation of trichoderma (Patent No 236382) dated 27/10/2009

24. Areas of consultancy and income generated : Nil

25. Faculty selected nationally/ internationally to visit other laboratories in India and abroad :

Prof. H.B. Singh, Prof. R. Chand, Dr. B.K. Sarma

26. Faculty serving in

a) National committees : Prof. H.B. Singh (Task Forces of DST and DBT, New Delhi)

b) International committees : Nil

c) Editorial Boards : Prof. H.B. Singh, Editor in Indian Journal of Plant Pathology; Editorial Boards of Journal of Mycology and Plant Pathology, Journal of Ecofriendly Agriculture

d) any other (please specify):

27. Faculty recharging strategies :

28. Student projects : **N.A.**

- percentage of students who have done in-house projects including inter-departmental projects: 100% (All post graduate students do in-house projects for their thesis)
- percentage of students doing projects in collaboration with other universities / industry / institute

29. Awards / recognitions received at the national and international level by

• **Faculty:**

- \* CSIR award for S& T Innovations for rural development (CAIRD)2011 for the Plant Growth Promoting Microbial Bioinoculants for enhanced crop Productivity : Prof. H.B. Singh (2012)
- \* Distinguish Scientist Award by Society for Research Development in Agriculture (2011) : Prof. H.B. Singh (2012)
- \* Prof. P. Maheshwari Medal by Indian Botanical Society (2011) : Prof. H.B. Singh (2012)
- \* V.P. Gokhale Prize by Maharashtra Association for the Cultivation of Science

(2011) : Prof. H.B. Singh (2012)

- \* NAAS Associate: Dr. B.K. Sarma (2011)
- \* Young Scientist Award by Society for Plant Research: Dr. B.K. Sarma (2009)
- \* Best Teacher award of the Institute : Dr. R.K. Singh (2012)

- Doctoral / post doctoral fellows : Nil
- Students : Nil

30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any.

- \* National Conference on oil Emphasizing Recent Advances in Oilseed Production and Industrialization with Special Reference to Rapeseed-Mustard, Nov.21-23, 2008
- \* National Conference on Unravelling multiple facets of biological control in national purview: trends, challenges and societal implications cum MEZ-Zonal Meeting of Indian Phytopathological Society, New Delhi, 26-27 Oct., 2010

31. Code of ethics for research followed by the departments :

**Institutional Biosafety Guidelines**

32. Student profile course-wise:

**M.Sc. Student**

Name of the Course (refer to question no. 4)	Year Wise	Applications received	Selected		Pass percentage	
			Male	Female	Male	Female
Mycology & Plant Pathology	2008	10	7	3	57%	100%
-----do-----	2009	12	8	4	75%	100%
-----do-----	2010	18	16	2	94%	100%
-----do-----	2011	16	13	3	-	-
-----do-----	2012	17	11	6	-	-

**Ph.D. Student**

Name of the Course (refer to question no. 4)	Year Wise	Applications received	Selected	Pass percentage	
				Male	Female

			Male	Female	Male	Female
Mycology & Plant Pathology	2008	4	2	2	-	-
-----do-----	2009	6	4	2	-	-
-----do-----	2010	7	7	-	-	-
-----do-----	2011	5	2	3	-	-
-----do-----	2012	8	6	2	-	-

### 33. Diversity of Students

#### M.Sc. Student

Name of the Course (refer to question no. 4)	Year Wise	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
Mycology & Plant Pathology	2008	Nil	50%	50%	Nil
----- do-----	2009	8%	34%	50%	8%
----- do-----	2010	6%	44%	50%	Nil
----- do-----	2011	18%	18%	64%	Nil
----- do-----	2012	11%	19%	65%	5%

#### Ph.D. Student

Name of the Course (refer to question no. 4)	Year Wise	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
Mycology &	2008	Nil	75%	Nil	25%

Name of the Course (refer to question no. 4)	Year Wise	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
Plant Pathology					
do	2009	17%	66%	17	Nil
do	2010	14%	43%	43%	Nil
do	2011	80%	Nil	20%	Nil
do	2012	38%	62%	Nil	Nil

34. How many students have cleared Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

**Student who have cleared NET –**

Year Wise	No of Student	Category
2008	2	Gen.
2009	1	Gen.
2010	2	Gen.
2011	1	SC
2012	1	OBC

35. Student progression: **PG to Ph.D.**

Student progression (Year Wise)		Percentage against enrolled
2008		10%
2009		25%
2010		11%
2011		Nil
2012		Nil
Employed • Campus selection	2008	30%
	2009	25%
	2010	67%
	2011	Nil
	2012	Nil
Entrepreneurs		

36. Diversity of staff

Percentage of faculty who are graduates	
of the same university	88%

from other universities within the State	-
from universities from other States	<b>11.1%</b>
from universities outside the country	-

37. Number of faculty who were awarded Ph.D., D.Sc. and D.Litt. during the assessment period : **1**
38. Present details of infrastructural facilities with regard to
- Library : **No**
  - Internet facilities for staff and students : **Yes**
  - Total number of class rooms : **3**
  - Class rooms with ICT facility: **30%**
  - Students' laboratories : **1**
  - Research laboratories : **7**
39. List of post-doctoral students
- from the host university : **1**
  - from other universities : **2**
40. Number of post graduate students getting financial assistance from the university. : **Nil**
41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology: **Discussion at Department Council**
42. Does the department obtain feedback from
- faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback? : **Yes**
  - students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback? : **Yes through DC, DRC**
  - Alumni and employers on the programmes offered and how does the department utilize the feedback? : **through lectures**
43. List the distinguished alumni of the department (maximum 10)
1. Dr. B.F. Lingappa College of Holy Cross Worcesth, USA
  2. Dr. Mohindra Singh Attorney California USA
  3. Prof. B.L. Jalali Ex- Director (Research) H.A.U., Hissar and Ex-Director, NCIPM, new Delhi
  4. Prof. A.N. Mukhopadhyay Ex- Vice Chancellor A.A.U., Assam
  5. 5. Dr. R. Naidu Ex- Director (Research) Coffee Board, Bangalore

6. Dr. D.D. Shukla Ex. Chief Scientist S.I. R.O., Canberra, Australia
  7. Prof. G.S. Dubey Ex- Dean & Director (Research) B.A.U. Ranchi.
  8. Dr. M. M. Joshi Global Technical manager Dupont Laboratory, USA.
  9. Dr. B. Prithiviraj, Associate Professor, Nova Scotia Agril. College, Canada
44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.
- Special Lectures by Prof. D.R. Cook, University of California, Davis, USA; Dr. B.L. Jalali, Ex-Director, NCIPM, New Delhi; Dr. Satyajit Ray, Principal Scientist, ICAR, Dinhat, West Bengal.**
45. List the teaching methods adopted by the faculty for different programmes. **Teaching, Research and Extension methods**
46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored? :
- 90% attendance and Syllabus Cover**
47. Highlight the participation of students and faculty in extension activities :
- Kisan Mela, Kisan Gosti, Farmer Training**
48. Give details of “beyond syllabus scholarly activities” of the department :
- Invited Lectures, Training Programme, Brainstorming meeting, Seminar, Conference**
49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details. :
- Through NAAC**
50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.
- Identified new microbes for biological control of plant pathogens; for decomposition of crop residues; Quantitative Trait Loci for spot blotch resistance in wheat;**
51. Future plans of the department. :
52. Detail any five Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department. :

## Post-accreditation Initiatives

If the university has already undergone the accreditation process by NAAC, please highlight the significant quality sustenance and enhancement measures undertaken during the last four years. The narrative may not exceed ten pages.

### Annexure I.

#### List of Research Papers

1. Abhilash, P.C., Powel, J., Singh, H.B. and Brajesh K. Singh. (2012). Plant-microbe interactions: Novel applications for exploitation in multi-purpose remediation technologies. *Trends in Biotechnology*, 30(8): 416-420.
2. Ahmad, M. Upadhyay, R.S., Dar, N.A. and H.B. Singh. (2011). Medicinal plants used by Nomadic tribals of Rajouri Pir Panjal Foothills of North-West Himalayas in Jammu and Kashmir, India. *Medicinal Plants* 3(1): 53-58.
3. Anamika and Singh R.K. (2011) Development of *Dactylaria eudermata* Drechsler a predacious fungi in *Meloidogyne incognita* Archives of Phytopathology and Plant Protection Vol. 44(1)97-100
4. Anamika, Sobita Simon and Singh R.K. (2011) Occurrence of root knot disease in green onion in Allahabad Archives of Phytopathology and Plant Protection Vol. 44(1)101-104
5. Bashyal B.M. Chand, R. Kushwaha, C. Joshi, A.K. and Kumar, S. 2011. *Bipolaris sorokiniana* of Barley: Infection behavior in different member of poaceae. Indian Phytopath 64: 28-31
6. Bashyal B.M, Chand, R, Prasad, L.C, Joshi, A.K, 2011. Partial resistance components for the management of spot blotch pathogen *Bipolaris sorokiniana* of Barley (*Hordeum vulgare* L.) Acta Phytopathologica et Entomologica Hungarica 46: 49 – 57.
7. Bashyal B.M., Chand, R, Prasad, L.C, and Joshi A.K, 2012. Influence of growth stage on sensitivity to helminthosporol toxin of *Bipolaris sorokiniana* of barley (*Hordeum vulgare*) Indian J of Agricultural Sciences 82: 724-726
8. Bashyal BM, R.Chand, C. Kushwaha, L.C.Prasad and A.K.Joshi 2009. An improved *in vitro* technique for screening of barley genotypes against toxin produced by spot blotch pathogen *Bipolaris sorokiniana* Indian J. of Agricultural Sciences 79: 562-564
9. Bashyal BM, R.Chand, C. Kushwaha, L.C.Prasad and A.K.Joshi 2010. Association of melanin content with conidiogenesis in *Bipolaris sorokiniana* of barley (*Hordeum vulgare* L.) World J. Microbiology and Biotechnology 26: 309 -316.
10. Chand R, Devyani Sen, K.D. Prasad, A.K. Singh, B.M.Bashyal, L.C. Prasad and A.K. Joshi 2008. Screening for disease resistance in barley cultivars against *Bipolaris sorokiniana* using callus culture method. Indian J. Exp. Biology 46: 249-253
11. Chand R, O.P. Yadav I, B. M. Bashyal, L.C. Prasad and A. K. Joshi 2012 Technique for the maintenance of heterokaryotic isolates of *Bipolaris sorokiniana* under ordinary conditions Indian Phytopathology (Accepted)

12. Chand R., Pradhan.P.K., Prasad,L.C., Kumar,D.,Verma, R.P.S., Singh, D.P. and Johi, A.K.,2010. Diversity and association of isolates and symptoms of spot blotch caused by *Bipolaris sorokiniana* of barley (*Hordeum vulgare* L). *Indian Phytopathol* 63: 154- 157.
13. Chand R, Singh V, Chhattar Pal, Prabhat Kumar and Manoj Kumar. 2012. First report of a new pathogenic Variant of *Cercospora canescens* on mung bean (*Vigna radiata*) from India. *New Disease Reports*. 26:pp6
14. Chand R., Shroof, S., Kushwaha,C., Kharwar,R.N. and Singh, A.K. 2011. Infection biology of aeciospores of *Uromyces viciae fabae* under warm humid conditions *Indian Phytopathology* 64: 235- 239
15. Chand R., Singh, V, Chhattar Pal, Kumar, P. and Kumar, M. 2012 First report of a new pathogenic variant of *Cercospora canescens* on mungbean (*Vigna radiata*) from India. *New Disease Report* 26: 6
16. Chourasia, H.K., Suman, K.S. and H.B. Singh (2008). *Bacillus Thuringiensis* Biopesticides : An Overview of Research And Policy Issues. *Indian J. Plant Pathology* 26(122): 1-7.
17. Chourasia, H.K., Suman, S.K. and H.B. Singh (2009). An Overview of Research on The Analytical and Immunochemical Detection of Aflatoxins In Food Commodities. *Indian J. Plant Pathology* 27(122): 1-14.
18. Jain, A., Singh, A., Singh, S. and H.B. Singh. (2012). Microbial consortium induced changes in oxidative stress markers in pea challenged with *Sclerotinia sclerotiorum*. *Journal of Plant Growth Regulation*. (Under review).
19. Jain, A., Singh, S., Sarma, B.K., Singh, H.B. 2012. Microbial consortium mediated reprogramming of defense network in pea to enhance tolerance against *Sclerotinia sclerotiorum*. *Journal of Applied Microbiology* 112: 537-550.
20. Jha, A., Upadhyay, A., Rasane, P. and H.B. Singh. (2011). Quantitative studies of phytochemicals of selected green leafy vegetables and their antioxidant potential. *Medicinal Plants*, 3(2):113-117.
21. Joshi A.K. and R. Chand, 2011 Progress of research done to understand host -pathogen relationship for spot blotch pathogen of wheat *J. Wheat Res* 3: 1-7
22. Joshi AK, J. Crossa, B. Arun, R. Chand, R. Trethowan, M. Vargas and I. Ortiz-Monasterio 2010. Genotype x environment interaction for zinc and iron concentration of wheat grain in eastern Gangetic Plains of India. *Field Crop Research* 116: 268 -277
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## Annexure II

### List of Book Chapters:

1. Bose, Bandana, Mondal, Sananda, Sinha, A. and Trivedi, Parmanand (2012). Seed priming in respect to disease resistance. "Microbial Biodiversity of Natural Ecosystem: Modern Trends" edited by A. Sinha, B.K. Sarma and Manisha Srivastava Published by Biotech Books, New Delhi, India, Pp. 493-512.
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