



**PLANTICA FOUNDATION**  
(Registered under The Indian Trust Act, 1882 of Govt. of India)  
[www.plantica.in](http://www.plantica.in)  
[www.jpsr.in](http://www.jpsr.in)  
(ISO- 9001: 2015 Certified Organization)

### Vision and Mission:

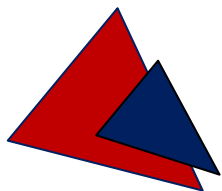
**PLANTICA Vision** is to be one of the most pioneering, innovative, use-friendly and self – supported educational society, training and research centre/ institute in the world.

**PLANTICA Mission** is to facilitate the acquisition of technical skills by students and professionals in all sectors of agricultural/ plant science economy in order to enable them to provide most effective support and services to farmers and other agricultural and researchers' community for practicing sustainable agriculture and ensuring better income for their produce.

**What we do?** We are Researchers and Training Providers who offer agricultural/ plant science related need based training programs to the students of School, Under Graduate - Post Graduate courses and to the young professional / researchers who want to be an entrepreneur in agriculture sector. We also publish Journals, Books and educational materials for Farmers, Students and Researchers.



**PLANTICA FOUNDATION**



## Approvals & Accreditation

Indian Trusts Act, 1882



The Indian Trust Act, 1882  
Govt. of India



ISO 9001:2015 Certified  
for Quality Standards

## Advisory Board



**Prof. (Dr.) A. K. Karnatak**  
Vice Chancellor  
VCSGUHF, Bharsar,  
(Govt. of Uttarakhand) Uttarakhand



**Prof. (Dr.) I. J. Gulati**  
Ex- Dean, Faculty Chairman &  
Registrar, Rajasthan Agriculture  
University, Bikaner



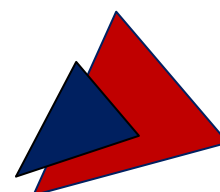
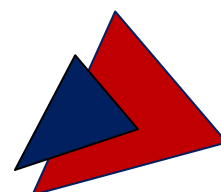
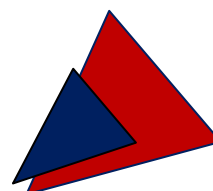
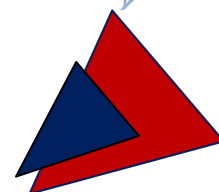
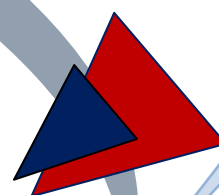
**Prof. (Dr.) A. R. Nautiyal**  
Director- HAPPRC  
HNBGU (A Central University)  
Srinagar, U.K.



**Prof. (Dr.) J. S. Chauhan**  
Dean – Agriculture and Allied Science  
HNBGU (A Central University)  
Srinagar, U.K.



**Dr. A. C. Mishra**  
Director Research  
Banda Agriculture University  
Banda, U.P.





## **PLANTICA FOUNDATION**

(Registered under The Indian Trust Act, 1882 of Govt. of India)

### **Registered Office Address and Contact Detail**

#### **PLANTICA FOUNDATION**

Madhur Vihar, Phase – 02, Lane No. – 03  
Near – Bangali Kothi, Ajabpur Khurd  
Dehradun, Uttarakhand

Contact No.: +91 7060709609/ 9927235929

E-mail: [planticaddn@gmail.com](mailto:planticaddn@gmail.com)

### **Official Organizations of PLANTICA FOUNDATION**

**1. Association of Plant Science Researchers (APSR)**

***Published Research Journal:***

***PLANTICA- Journal of Plant Science (ISSN: 2456-9259)***

**Website:** [www.jpsr.in](http://www.jpsr.in), **E-mail:** [jpsrsf@gmail.com](mailto:jpsrsf@gmail.com) and [editor@jpsr.in](mailto:editor@jpsr.in)

**2. Plantica Institute of Agricultural Studies (PIAS)**

**Provide Agricultural/ Plant Science related needs based Trainings and Diploma for skill development**

**Website:** [www.plantica.in](http://www.plantica.in) **E-mail:** [planticaddn@gmail.com](mailto:planticaddn@gmail.com)

### **APSR, organized two National Conferences since last two years under the broad theme**

#### **Plant Science Researchers Meet (PSRM)**

**1. National Conference on Current Research and Development in Plant Sciences- 26<sup>th</sup> January, 2018**

(Venue: Town Hall Auditorium, Nagar Nigam, Dehradun, Uttarakhand)

*Research Papers Accepted for Presentation: 169*

**Chief Guest:** Sri Subodh Uniyal, Honorable Agriculture Minister, Govt. of Uttarakhand  
Sri Vinod Chamoli, Mayor Dehradun, Govt. of Uttarakhand

**Guest of Honor:** Dr. R. K. Arora, Ex-Principle Scientist, CPIR- ICAR

**2. National Conference on Climate Change: Plant People and Planet- 16<sup>th</sup> – 17<sup>th</sup> February, 2019**

(Venue: Uttarakhand Technical University (UTU), Sudhowala, Dehradun, Uttarakhand)

*Research Papers Accepted for Presentation: 208*

**Chief Guest:** Dr. U. S. Rawat, Honorable Vice Chancellor, SDSUV, Tehri, Uttarakhand  
Dr. M.P.S. Bisht, Director, USAC, Govt. of Uttarakhand

**Guest of Honor:** Dr. R. K. Arora, Ex-Principle Scientist, CPIR- ICAR



**PLANTICA FOUNDATION**  
(Registered under The Indian Trust Act, 1882 of Govt. of India)

Subodh Uniyal  
Minister  
Agriculture, Horticulture, Sericulture

Office:  
Vidhan Sabha, Dehradun, Room No. 121,  
Mob. 9897200700, 8979338888  
Ph. : 0135-2666671 (O), 0135-2665855 (F)  
E-mail : agricultureministeruk@gmail.com

Letter No. 333  
Date: 04/01/2018

**Message**

Dear Dr. Badoni

It is matter of immense pleasure that PLANTICA – Journal of Plant Science published by Association of Plant Science Researchers, Dehradun, organizing one day National Conference on “Current Research and Development in Plant Sciences” during January, 28<sup>th</sup>, 2018. It will definitely boost our scientists, researchers and academicians to work in this field.

The organizers have chosen a very interesting topic for deliberation as research and development in plant sciences are important means in day-to-day life for humans, animals as well as environment. It is supported by a large technically sound and talented pool and with tremendous opportunities of growth in Agriculture, Environment and public sector. It has an amazing potential in a developing economy.

On my personal behalf and on behalf of the Ministry of Agriculture, Govt. of Uttarakhand, I wish a grand success to this event.

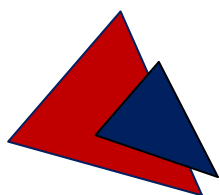
*Subodh Uniyal*  
(Subodh Uniyal)  
4/1/18

Dr. Anoop Badoni  
President  
Association of Plant Science Researchers  
Dehradun

Resi : R-3 Yamuna Colony, Dehradun, Uttarakhand

**Acknowledged by:**

**Shri Subodh Uniyal**  
Honorable Agriculture Minister  
Govt. of Uttarakhand,  
Dehradun



**Acknowledged by:**

**Shri Vinod Chamoli**  
Honorable Mayor and MLA,  
Govt. of Uttarakhand  
Dehradun

विनोद चमोली  
मेयर,  
नगर निगम, देहरादून  
उत्तराखण्ड (भारत)  
**Vinod Chamoli**  
Mayor,  
Nagar Nigam, Dehradun  
Uttarakhand (India)

कार्यालय : (0135) 2655620, 2650300  
निवास : (0135) 2676600  
फैक्स : (0135) 2651060  
पत्रांक : 636/M/5/2018  
दिनांक : 21-01-2018

**Message**

It gives me immense pleasure that PLANTICA – Journal of Plant Science published by Association of Plant Science Researchers, Dehradun, Uttarakhand is organizing National Conference on “Current Research and Development in Plant Science” at Dehradun. The main objective of the conference is to encourage the exchange of scientific information on various and interdisciplinary aspects of plant sciences. The interactions would benefit the researcher’s community comprehensively and direct their educational efforts towards self-development and towards the development of the state Uttarakhand.

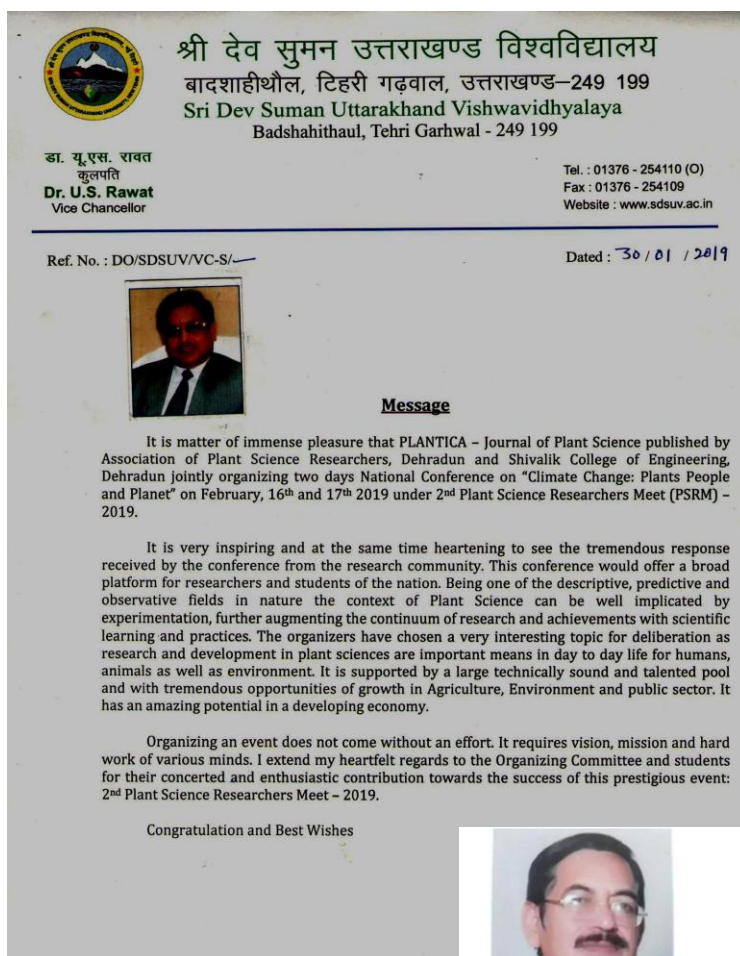
I congratulate the team for their organization and wish them all the best in their endeavor.

On behalf of Nagar Nigam Dehradun and on my personal behalf it is our pleasure to welcome you all in this Conference; I hope you will enjoy your stay in Dehradun, Uttarakhand.

*Vinod Chamoli*  
(Vinod Chamoli)  
Mayor and MLA



**PLANTICA FOUNDATION**  
(Registered under The Indian Trust Act, 1882 of Govt. of India)



### Acknowledged by:

**Prof. (Dr.) U. S. Rawat**  
Honorable Vice Chancellor,  
SDSUV, Tehri Garhwal, U.K.



**Dr. R. K. Arora**  
M.Sc., Ph.D., ARS  
Ex- Principal Scientist  
CPRI – Indian Council of Agricultural Research

### Message

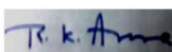
It is pleasure to know that PLANTICA – Journal of Plant Science published by Association of Plant Science Researchers, Dehradun, Uttarakhand is organizing a National Conference on “**Current Research and Development of Plant Science**” during 28<sup>th</sup> January, 2018. I complement the organizers to focus on the central theme of Plant Sciences, so very vital for the survival of our planet earth.

### Acknowledged by:

**Dr. R. K. Arora**  
Principal Scientist,  
CPRI - ICAR

All efforts of developmental planning revolve around the central theme of PSRM how could current research on plant sciences be managed and used for socio- economic development and for conserving and/ or improving the environmental yardsticks in the region. Embedded in the word “management” is the concept of sustainable utilization, well within the carrying capacity of the system for the benefit of the present generation without compromising on the needs of future generations. Introduction of appropriate technology and enhanced cash flows through market economy are the primary concerns of village folks. Priorities in the list of elites may include, for example, income generating sectors like tourism, while industries may figure prominently in the wish list of unemployed youth, adequate availability of food in areas of limited agricultural land (and water), and provision of land stabilization measures in areas prone to natural disasters like floods and landslides, etc. An overarching theme that is likely to influence all above sectors is the potential effects of climate change. There is thus little commonality between the local and national or global priorities, and these may also change with time. The logical unifying principles of inducing sustainable development through proper management of the natural resource capital, it is suggested, can be attempted through appropriate technological interventions and innovations, in parallel with social awakening.

I wish every success to the proposed National conference on Plant Sciences, and hope that the deliberations and considered discussions will lead to a clearer path for action.

  
(R. K. Arora)



**PLANTICA FOUNDATION**

*(Registered under The Indian Trust Act, 1882 of Govt. of India)*

**Till now PLANTICA, provided training to the students of the following Universities/ Institutions/ Colleges:**

1. Lovely Professional University, Jalandhar, Punjab
2. Dr. Bhimrao Ambedkar University, Agra, U.P.
3. Chandigarh University, Punjab
4. NIMS University, Jaipur, Rajasthan
5. Glocal University, Saharanpur, U.P.
6. Vivekanand Global University, Jaipur, Rajasthan
7. SGRR University, Dehradun, Uttarakhand
8. Quantum University, Roorkee, Uttarakhand
9. Uttaranchal University, Dehradun, Uttarakhand
10. Doon Institute of Management and Research, Rishikesh, Uttarakhand
11. Roorkee Institute of Technology, Roorkee, Uttarakhand
12. Roorkee College of Engineering, Roorkee, Uttarakhand
13. Uttaranchal (P.G.) College, Near ISBT, Dehradun, Uttarakhand

**PLANTICA, Provide Trainings in the following areas:**

1. Summer School on Agri – Entrepreneurship
2. Winter School on Agri – Entrepreneurship
3. Mushroom Cultivation
4. Food Processing – Value Addition
5. Organic Farming
6. Agri Business Management
7. Plant Health Clinic
8. Rural Agricultural Work Experience (RAWEX)

**PLANTICA – Agriculture Scientist Training Committee**

1. Dr. Anoop Badoni, M. Sc. (Ag), Ph.D., FAPSR, FMSTC, MSFSN
2. Dr. Pooja Kaintura, M.Sc. (Horticulture), Ph.D.
3. Dr. Rajeev Kumar Ranjan, MBA (IIT), Ph.D.
4. Mr. Naveen Chandra, M. Sc. (Ag)- Horticulture, MAPSR
5. Mr. Vinay Chamoli, M. Sc. (Ag)- Seed Science and Tech., ICAR-NET, MAPSR
6. Mr. Ankush Singh, M. Sc. (Ag)- Agronomy, MAPSR
7. Mr. Rathod Digvijaysingh, M. Sc.- Forestry, ICAR-NET, MAPSR
8. Mr. Devesh Joshi, MBA
9. Mr. Adarsh Dangwal, M. Sc. (Ag)- Agronomy



**PLANTICA FOUNDATION**  
(Registered under The Indian Trust Act, 1882 of Govt. of India)

**PLANTICA - Let's have a Visit .....**



**Prof. (Dr.) U. S. Rawat, VC, SDSUV  
(Govt. of Uttarakhand)**



**Prof. (Dr.) M. P. S. Bisht, Director  
(Uttarakhand Space Application Center)**



**Dr. R.K. Arora, Ex-Principle Scientist,  
CPRI- ICAR**



**Prof. (Dr.) A.R. Nautiyal, HNBU  
(Central University)**



**Prof. (Dr.) J. S. Chauhan, HNBU  
(Central University)**



**Dr. A.C. Mishra, BAU, Banda  
(State Agriculture University)**



**PLANTICA FOUNDATION**  
(Registered under The Indian Trust Act, 1882 of Govt. of India)

**PLANTICA - Let's have a Visit .....**

## PLANTICA - Journal of Plant Science

(ISSN- 2456-9259)

Published by Association of Plant Science Researchers – APSR

(Official Organization of Plantica Foundation)

Regt. Under The Indian Trust Act, 1882 of Govt. of India, ISO 9001:2015 Certified

[www.jpsr.in](http://www.jpsr.in)

### Chairman-Editorial and Advisory Board



**Prof. (Dr.) A. K. Karnatak (Ph.D.)**  
Vice Chancellor, VCSGU University of Horticulture and Forestry, Bharsar, Pauri Garhwal, Uttarakhand, India, E-mail: [a\\_karnatak@yahoo.co.in](mailto:a_karnatak@yahoo.co.in)

### Editor –in – Chief



**Dr. Anoop Badoni**  
(M.Sc.- Ag, Ph.D., FAPSR, MSFSN)  
Associate Professor, School of Agricultural Studies, Quantum University, Roorkee (U.K.)  
E-mail: [badonianna@gmail.com](mailto:badonianna@gmail.com)  
[anoopbadoni.agr@quantumeduc](mailto:anoopbadoni.agr@quantumeduc)

### Managing Editor



**Dr. Pooja Kaintura** (M.Sc., Ph.D. ICAR-NET)  
Assistant Professor  
Doon Business School (Sri Dev Suman University), Dehradun, Uttarakhand India  
E-mail: [poojakaintura29005@gmail.com](mailto:poojakaintura29005@gmail.com)

### Editorial and Advisory Board Members



**Prof. (Dr.) I. J. Gulati ( Ph.D.)**  
Ex- Dean, Faculty Chairman & Registrar, Rajasthan Agriculture University, Bikaner, India, **Principal** - Agriculture, Doon Business School, Dehadun, Uttarakhand  
E-mail: [igjgulatirau09@gmail.com](mailto:igjgulatirau09@gmail.com)



**Dr. C. O. Ilori (M.Sc., Ph.D.)**  
Lecturer, Dept. of Crop Protection and Environmental Biology, Faculty of Agriculture and Forestry, University of Ibadan, E-mail: [co.ilori@mail.ui.edu.ng](mailto:co.ilori@mail.ui.edu.ng)



**Dr. A. R. Nautiyal (M. Sc., Ph.D.)**  
Professor and Director, High Altitude Plant Physiology Research Center, H.N.B. Garhwal Central University, Srinagar (U.K.), India, E-mail: [arnautiyal@gmail.com](mailto:arnautiyal@gmail.com)



**Dr. Babajide Odu (M.Sc., Ph.D.)**  
Lecturer, Dept. of Crop production and Protection, Obafemi Awolowo University Ile Ife, Nigeria, E-mail: [bodu@oauife.edu.ng](mailto:bodu@oauife.edu.ng) and [babajide\\_odu@hotmail.com](mailto:babajide_odu@hotmail.com)



**Dr. N. Murugalatha (M.Sc., Ph.D.)**  
Assistant Professor, School of Agricultural Studies, Quantum University, Roorkee, India, E-Mail: [murugalatha.asc@quantumeducation.in](mailto:murugalatha.asc@quantumeducation.in)



**Dr. J. S. Chauhan (M. Sc., Ph.D.)**  
Professor and Head, Department of Seed Technology, H.N.B. Garhwal Central University, Srinagar (U.K.), E-mail: [js.chauhan@hnbgu.ac.in](mailto:js.chauhan@hnbgu.ac.in)



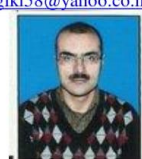
**Dr. A. C. Mishra (M.Sc., Ph.D.)**  
Associate Professor, Horticulture (Vegetable Science), Banda Agriculture University, Banda, U.P.



**Dr. Abhishek Mathur ( Ph.D.)**  
Executive Director (R&D), NCS Green Earth Pvt. Ltd., Nagpur, Maharashtra, India, E-mail: [abhishekmthr@gmail.com](mailto:abhishekmthr@gmail.com)



**Dr. K. L. Dangl (M.Sc., Ph.D.)**  
Professor, Rajasthan College of Agriculture, Maharana Pratap University of Agriculture and Technology, Udaipur, E-mail: [dangikl58@yahoo.co.in](mailto:dangikl58@yahoo.co.in)



**Dr. Zahoor Ahmed Dar ( Ph.D.)**  
Associate Professor, Genetics and Plant Breeding, SKUAT, Srinagar, J&K, E-mail: [zahoorpb@gmail.com](mailto:zahoorpb@gmail.com)









**Plant Science Researchers Meet (PSRM) - 2019**  
**Conference On Climate Change: Plants People & Planet**  
16<sup>th</sup> & 17<sup>th</sup> February, 2019  
**PPPP**  
Plants People Planet  
Organized by

**2nd Plant Science Researchers Meet (PSRM) - 2019**  
**National Conference On Climate Change: Plants People & Planet**  
16<sup>th</sup> & 17<sup>th</sup> February, 2019  
**PPPP**  
Plants People Planet  
Organized by





# PLANTICA FOUNDATION

*(Registered under The Indian Trust Act, 1882 of Govt. of India)*

[www.jpsr.in](http://www.jpsr.in)

[www.plantica.in](http://www.plantica.in)



---

## Plantica Foundation

*(Registered under Indian Trust Act, 1882 of Govt. of India)*

Madhur Vihar Phase-2, Lane No.-3, Near – Bangali Kothi, Ajabpur Khurd, Dehradun, Uttarakhand  
Visit us: [www.plantica.in](http://www.plantica.in) and [www.jpsr.in](http://www.jpsr.in) E-mail: [planticaddn@gmail.com](mailto:planticaddn@gmail.com) Contact: +91 7060709609