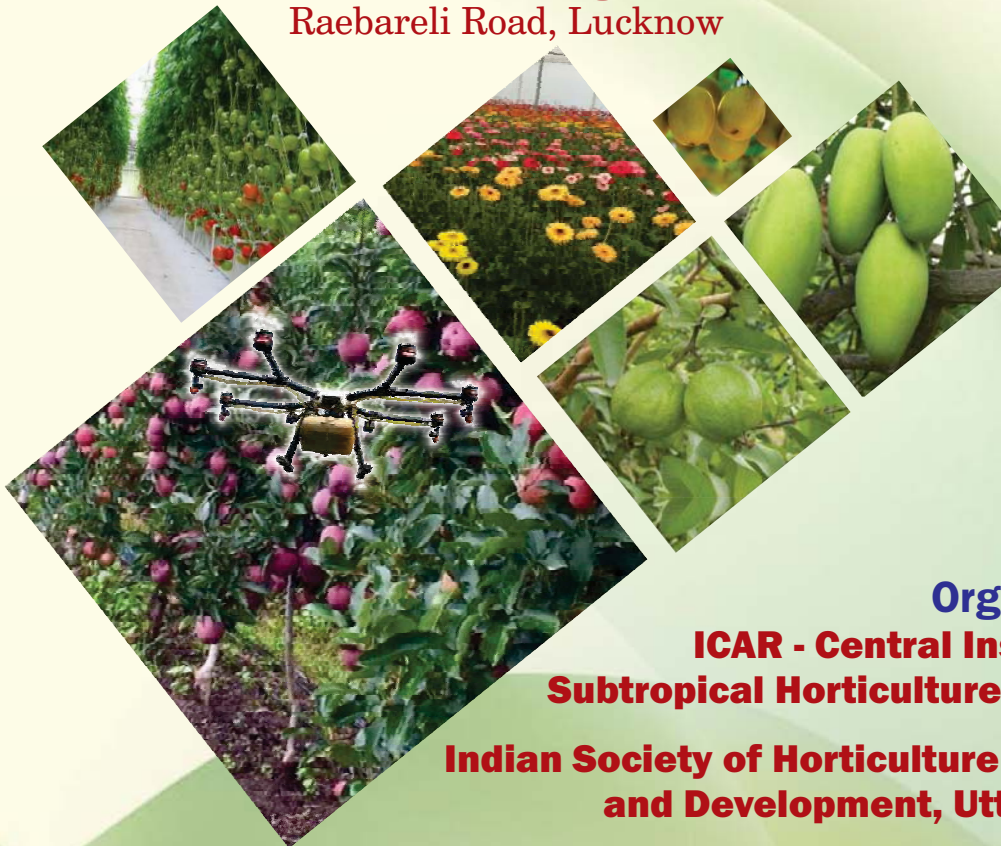




**Summary Proceeding and Recommendations  
of the  
Progressive Horticulture Conclave (PHC)-2019  
December 8-10, 2019**



**Theme**  
**Futuristic Technologies in Horticulture**  
**Held at**  
**ICAR-Indian Institute for Sugarcane Research**  
Raebareli Road, Lucknow



**Organised by**  
**ICAR - Central Institute for  
Subtropical Horticulture, Lucknow**  
**Indian Society of Horticulture Research  
and Development, Uttarakhand**

**Chief Collaborators**

Directorate of Hort. and Food Processing (HMNEH), Dehradun, Uttarakhand  
ICAR - Indian Institute of Sugarcane Research, Lucknow

**Collaborators**

ICAR - National Research Center on Litchi, Muzaffarpur, Bihar  
ICAR - Central Institute for Arid Horticulture, Bikaner, Rajasthan  
U.P. Council of Agricultural Research, Lucknow

**Sponsors**



**Summary Proceeding and Recommendations  
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Progressive Horticulture Conclave (PHC)-2019**

**Complied and edited by**

Dr. R. A. Ram, Organising Secretary & Principal Scientist, ICAR-CISH, Lucknow

Dr. S. Rajan, Director, ICAR-CISH, Lucknow

Prof. R.K. Pathak, President, ISHRD & Former Director, ICAR-CISH, Lucknow

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- National Bank for Agriculture and Rural Development, Vipin Khand, Gomti Nagar, Lucknow, Uttar Pradesh
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- Uttarakhand Council for Biotechnology, U. S. Nagar, Haldi, Uttarakhand
- Indian Farmers Fertilizer Cooperative Limited, Lucknow
- National Horticulture Board, New Delhi

**Summary Proceeding and Recommendations  
of the  
Progressive Horticulture Conclave (PHC)-2019  
FUTURISTIC TECHNOLOGIES IN HORTICULTURE  
December 8-10, 2019**

ICAR-Central Institute for Subtropical Horticulture, Lucknow organized Progressive Horticulture Conclave-2019 from 8-10 December, 2019 in collaboration with Indian Society of Horticulture Research and Development at ICAR-Indian Institute of Sugarcane Research, Lucknow for celebration of Golden Jubilee year of Progressive Horticulture.

Conclave was inaugurated by honourable Minister of State, Department of Horticulture, Agriculture Export, Marketing and Foreign trade, Government of Uttar Pradesh Sri Shriram Chauhan. Inaugural session was graced by Dr. P. Kaushal, Vice Chancellor, Dr. U. S. Parmar University of Horticulture and Forestry, Solan, Dr Brijendra Singh, Director General, UPCAR and VC, NDU&T, Ayodhya, Dr. S. Rajan Director, ICAR-CISH, Lucknow and Dr. A. D. Pathak, Director, ICAR-IISR, Lucknow, Conclave was organized

under the guidance of Professor R. K. Pathak, President of ISHRD. Other dignitaries viz; Dr. Mangla Rai (Former DG ICAR and Secretary DARE, New Delhi) Dr. S.N. Pandey (Former ADG, Horticulture), Padma Sri Dr. Bhrama Singh (Former Director, DRDO), Dr. A.K. Misra (Former PC, Subtropical Fruits), Dr. Praksh Patil (Project Coordinator, AICRP (Fruits) and state Horticulture Govt. officials were also graced the occasion.

In this conclave, participation of over 400 scientific workers, industrialists and farmers from 12 states & 03 Union territories, deliberations by 5 guests and 25 farmers; and presentation of 37 lead lectures, 72 oral presentations and 92 posters were made. The Conclave was registered by 219 delegates. Total nine technical sessions were organized to focus on different areas of horticulture production and utilization. Recommendations of different sessions are as under:





## Technical Session 1: Future horticultural crops and production technologies

1. Potential crops for temperate and tropical regions, especially underutilized horticultural crops from Arunachal Pradesh and Himachal Pradesh in North to the humid subtropics in South needs to be promoted and utilized.
2. Use of quality planting material, orchard, insect pest, pollination management, mitigation of climatic vagaries, plantation in cold desert, re-plantation in mid and high hills are the future needs to improve quality production in temperate regions of the country
3. Production and breeding techniques especially in potato, sapota, jamun, banana etc are to be focused on traits specific and export oriented for improvement in yield and quality.
4. Mechanization, use of tools viz; drone, robots other futuristic tools and incorporation of cold chain management in Horticulture production should be focused for reducing the cost as well as post harvest losses.
5. Subtropical hilly areas of the country viz; North East and North West need to be utilized with growing of low chilling horticultural crops with complete package of practice to improve the quality production.
6. Development of climate resilient varieties (scion/rootstock), introgression of genes from wild relatives, production and supply of quality planting materials, adoption of GAP standards for quality produce, pre and post harvest management, value addition and marketing and bio-prospecting – Papaya (dengue), *Annona muricata* (cancer) & jamun (diabetic) are the futuristic need of horticulture production.
7. Promotion of underutilized fruit viz; rambutan, avocado, durian, mangosteen, passion fruit, Malay apple, dragon fruit, longsat, soursop, west Indian cherry, carambola etc in unutilized areas in humid tropical regions of India need to be done for securing medicinal and nutritional security of the people.
8. Rejuvenation of old and unproductive orchards of sapota needs to be promoted for quality production instead of ultra high density.
9. Arunachal Pradesh is bestowed with the most congenial climatic conditions for growing of diverse crops. In the region, wastelands unfit for supporting cultivation of high input demanding fruit crops are to be utilized for growing of underutilized fruit crops and other citrus species for conservation and improving the economy of the region.



## Technical Session 2: Quality inputs and use efficiency

Chairman: Dr. K. N. Tiwari

Co-chairman: V. K. Mishra

Convener: Dr. Anil Kumar Shukla

Rapporteur: Dr. K. K. Srivastawa and Dr. Israr Ahmad

### Recommendations

1. Harnessing cosmic energy and judicious use of agri inputs need to be promoted in systematic manner with major emphasis on integration of livestock in agricultural production.
2. Cropping system model needs to be promoted for the improvement of livelihood of farmers in Bundelkhand and other drought prone areas in the country.
3. Soil health and fodder management of livestock's for improving soil condition and making available fodder demands, field, boundaries and inter spaces in fruit orchard need to be utilized.
4. For meeting the demand of the seed and planting materials of fodder, seed bank need to be established at village level.
5. The wealth of indigenous knowledge pertaining to soil health management needs to be integrated to ensure for best use of on-farm inputs along with fertilizers, biofertilizers and organic wastes.
6. Integrating the different farming component need to be promoted for enhancing the farmers income utilizing INM practices for good soil health and sustainable yield.
7. Nano formulations available in the market need to be tested before recommending to the farmers.



### Technical session 3: Structure/ models artificial intelligence automation / techniques for future needs.

Chairman : Dr. Brahm Singh

Co-Chairman : Dr. Shailendra Rajan

Rapporteur : Dr. S. R. Singh

The Chairman of the session Dr. Brahm Singh welcomed all the participants and expressed his thanks to the organizer for giving the opportunity for chairing the session. He highlighted the importance of precision horticulture automation and future research needs. The Co-chairman Dr. Shailendra Rajan also emphasized the importance of urban and peri-urban horticulture in solving the malnutrition problem of the nation. One lead lecture and thirteen oral presentations were made in the session.

First lead speaker Dr. S. R. Singh explained the prospects of vertical farming for urban and peri urban horticulture. Nexty, Dr. G. Pandey narrated on rejuvenation technology of senile mango orchards for sustainable productivity improvement. Dr. S. K. Shukla presented findings on inter cropping in mango orchard to double the farmers income Dr. B. Das stated soil organic carbon dynamic for sustainable production. Dr. P. N. Barman presented paper on productivity management of high density mango orchard. Dr. S. L. Chawala stated the importance of turf grass livelihood generation. Dr. Raj Narayan presented the recent technologies for development of temperate horticulture.

Dr. Pradeep Kumar narrated future of protected

cultivation and vegetable grafting to face the biotic and abiotic challenges. Shri. H.C Verma presented the role of IT technology to enhance the farmers income. Dr. P. K. Shukla emphasized on the effective tools for pest management in mango. Dr. K. K. Srivastava presented the technology of container fruit growing. Mrs Deepti Rai briefed the technology of hydroponics for biomass production whereas Dr. R. K. Singh presented the aeroponics technique of potato seed production. During this session following recommendation were emerged.

#### Recommendations

1. Breeding of horticultural crops should also focus on development of varieties for vertical farming.
2. Centralized information of rejuvenation techniques of all fruit crops should be developed.
3. Models for carbon sequestration needs to be refined for horticultural crops.
4. Rootstock for biotic and a biotic stresses tolerance need to be identified for protected cultivation of vegetables.
5. Intercropping of shade loving crops need to be promoted in developed mango orchards to enhance farmers income.



## Technical session 4: Challenges and mitigation of climate change, biotic and abiotic stresses in horticulture

Chairman : Dr. R. P. Srivastava

Co-chariman : Dr. A. K. Mishra

Converor : Dr. H. S. Singh

Rapporteurs : Dr. P. K. Shukla

### There were three lead lectures and three oral presentations.

First lead lecture was delivered by Dr. H. S. Singh on topic Challenges and strategies of Insect pest management in fruit crop. Main findings are as under:

1. For effective IPM in fruit crops, canopy regulation and reduction of tree height is needed for pest monitoring and targeted spray.
2. Bio-diversity enhancement in and around orchards needs to be given due priority for pollination and natural pest control.
3. There is need to rationalize the pesticide use.
4. Problem solving research for emerging pest species needs to be strengthened.

Second lead lecture was by Dr. P. K. Shukla on the topic strategies to meet newer challenges of mango diseases. Main findings were as under:

1. Selection of suitable soil for mango production
2. New orchard should be planted in area having suitable climatic conditions
3. Die-back, branch wilt, twig drying can be managed by pruning of branches 15-20 cm below infected portion followed by spray of COC@ 0.3% and special care for nutrition and irrigation.
4. Wilt and decline can be managed by soil root zone drenching with thiophanate methyle@ 50-150 g per tree and pruning of affected branches followed by spray of propiconazole@0.1%

Third lead lecture was by Dr. G. C. Sachan on the topic ITK in insect pest management. He emphasized on use of ITK on atmospheric management of stored grain pests. ITK should be further refined for an eco-friendly insect/ pest management.

### Oral presentations

1. First oral presentation was delivered by Dr. P. K. Shukla on topic "Application of information

technology to curtail the cost of insect pest management by appropriate diagnosis: A case study with mango and guava". He emphasized that proper diagnosis is key for economically successful pest management. Sensitization for awareness of insect and disease symptoms identification is most desired.

2. Second oral presentation was delivered by Dr. Kuldeep Shrivastava on the topic Insect pest management options in litchi through bio-enhancers. He emphasized pruning of infected twigs just after fruit harvesting and canopy management reduced the fruit borer mite and leaf folder population. Application of 4 kg castor cake and 1 kg neem cake in root zone in July month reduced the pest population in litchi ecosystem. Spraying of panchagavya 30 ml/lit of water or neem oil @ 4 ml/ lit during fruiting season manage fruit borer in litchi. Alternate 4 spray is required in fruiting season.

Third oral presentation was done by Dr. A. K. Trivedi on the topic "Management of sunshine resources in mango (*Mangifera indica* L.) orchards for enhancing productivity". He has emphasized that light is not a limiting factor for mango production however management of direct diffuse light ratio is important. Excess or deficit of radiation level and light quality (direct vs diffuse) available to different plant parts severely affects production and productivity of perennial fruit crops. Leaf level photosynthesis in sun facing leaves can be higher under direct light compared to equivalent absorbed irradiances of diffuse light.

Understanding the potential of species mediated by light- shade is critical to predict productivity. For proper utilization of sunshine resources optimal direct-diffuse light ratio should be maintained under tree canopy. Tree architecture affects light-shade relationship; hence management of tree architecture is crucial for harnessing the solar radiation.



### Recommendations

1. Efficient canopy architecture in fruit crops is required for effective insect pest management.
2. Suitable habitat management needs to be promoted in and around the orchards for effective pollination and natural pest management.
3. Effective disease management package of practice should be promoted for enhanced horticulture production.
4. ITKs should also be integrated in effective and eco-friendly management of insect pest.
5. Information technology, proper diagnosis and cost effective eco-friendly management of insect pest should be given priority.



## Technical Session 5: Bursting the barriers in horticulture and using next generation technological tools

Chariman : Dr. S. N. Pandey  
Co-chairman : Dr. D. K. Sharma  
Rapporteur : Dr. Anju Bajpai

Bursting the barriers in horticulture and using next generation technological tools was chaired by Dr. S. N. Pandey and Co-chaired by Dr. D. K. Sharma. In the session 6 lead speakers covered entire gamut of newer technological interventions toward enhanced horticulture production.

First lead lecture was delivered by Dr. S. N. Pandey who summarized research conducted in this country for grape improvement. Dr. S. Rajan presented application of GIS and IT based- tools being utilized for precision horticulture in the world and need for these in our country. Dr. A. K. Dubey emphasized importance of citrus research for its nutritive attributes and talked about the role of rootstock for overcoming productivity barriers in India. Dr. O. P. Awasthi gave an overview on root stock research with emphasis on abiotic stress. Dr. Anju Bajpai gave an account of mango genomics and its applications in breeding. Dr. Deepa H. Diwedi talked about future super fruits with special emphasis to cape gooseberry and water chestnut. 12 oral presentations were scheduled in the session and young researchers and students presented their research in this session covering various unique genetic resources niche areas and important research issues.

### Recommendations

1. Development of rootstock(s) tolerant against drought, salt and nematode needs to be identified to boost grape industry in India.
2. Application of GIS, sensors, automation and IT based tools should be promoted and utilized for precision horticulture in the country. There is need to transform precision farming practices as per the requirement of Indian horticulture sector.
3. Role of rootstocks for overcoming productivity barriers, biotic and abiotic stress in citrus production required to be focussed upon.
4. Skill development and use of genomics tools and CRISPR technology should be used in strengthening horticultural crop production.
5. Lot of genetic resources collected in the country in previous decades need to be utilized for precision breeding and knowledge generalized in the past.
6. Underutilized fruits in different parts of the country requires conservation, area expansion and utilization for their nutraceutical attributes.



## **Technical Session 6: Innovative technologies of post-harvest, waste and supply management**

**Chairman : Dr. I. S. Singh**

**Co-chairman : Dr. Vishal Nath**

**Convenor : Dr. Sanjeev Kumar**

**Rapporteurs : Dr. R. B. Tewari, Dr. Sanjay Pathak**

The session was conducted in Director's committee room. Dr. I.S. Singh made preliminary remarks and highlighted the importance of innovative technologies in post-harvest management. Five lead lectures and 10 oral presentations were made in the session. Dr. Vishal Nath Director NRC on Litchi gave an account of advanced tools to reduce pre and post-harvest losses in litchi which is to the tune of 28% and 43%, respectively. He suggested that good agricultural practices in post-harvest precision in supply chain management can reduce the loss to the level of 10-15 %. He emphasized upon produce saved is equal to produce added to the basket.

Dr. C. K. Narayana from ICAR-IIHR, Bangaluru emphasized the need of post-harvest chain from field to retailer level. Dr. Neelima Garg, ICAR-CISH, Lucknow given options for making wealth from waste using advanced information and technologies through development of different value added products. Dr. Sanjeev Kumar, ADG (Hort), UPCAR, Lucknow talked detailed on account of problems and available options in post-harvest management of fruits and vegetables in the country and emphasized the need to develop infrastructure in this sector.

Dr. R.B. Tewari of ICAR-IIHR, Bangaluru informed the house about value added snacks as an alternative to MFSS and demonstrated the range of products from various fruits and vegetables. The scientist made excellent presentation on development of nutritious cookies of mango, fruit bars and different tool to reduce post-harvest problems vis-a-vis drudgery reduction and produce quality enhancement. The nutraceutical profiling, content quantification were also dealt in the session by various presenters. The alternative options and futuristic technologies in post-harvest management were discussed at the length.

Chairman Dr. I. S. Singh made his concluding remark and appreciated the presenters for good information. He also urged that efforts must be

made for following good production protocol for reduced losses after harvest. The infrastructure for handling and supply chain must be in place of production.

The mechanization needs to be integrated with commercial production system to meet international standards. The processing waste should be channelized to develop quality products using advanced information and technologies. New products must be based on nutritional value and acceptance of consumers.

### **Recommendations**

1. Good agricultural and precision farming practices should be integrated in supply chain management to reduce post harvest losses in horticultural crops.
2. Development of post-harvest chain rather developed from field to retailer level.
3. Processing industries wastes required to be converted in to wealth under secondary agriculture products viz; ethanol, composts etc
4. Infrastructure development and processing units required to be established in regional horticulture produce collection and marketing centers for reduction of post harvest losses.
5. Efforts should be made to reduce quality losses by adopting maturity standards. Promote use of tools and techniques to determine harvest maturity.
6. Range of value added snacks from various fruits and vegetables needs to be developed to reduce post-harvest problems vis-a-vis drudgery reduction and produce quality enhancement.
7. Effort should be made to develop good production protocol, infrastructure and mechanization, value added product and conversion of processing wastes in to quality products.
8. Promote commodity clusters (FPOs and FPCs) and establishment of pack house, processing

- and value addition centers in and around production catchment areas.
9. Development of low cost on-farm storage, handling and processing technologies that can be adopted by small farmers. Collection centers should be established to improve supply chain system.
  10. Modern postharvest techniques should be popularized among the farmers. Initiatives for product development and marketing will improve overall interest of farmers. Collaborate and identify niche areas of value addition.



## Technical Session 7: Indigenous technologies and horticulture for health, healing, happiness and environment

Chairman: Prof. R. K. Pathak

Co-chairman: Dr. Ulrich Berg

Convener: Ms. Binita Shah

Rapporteur: Dr. R.A. Ram and Dr. Govind Kumar

Session started with initial remark by the chairman Prof. R. K. Pathak on present status and significance of organic farming. The following lead speakers focused on different area and practices in agricultural and horticultural practices.

Total 03 lead lectures were delivered in this session including:

1. Sri Anand V. Gaikwad focused on Homa and biodynamic farming and its relevance with the climate change. He has also mentioned that how organic content of the soil can be enhanced with the organic input in sustainable manner.
2. Dr. R. A. Ram has derived talk on concept on bio-enhancers and its role in horticultural crops, in this he has focused on the scientific inside (in terms of microbial activity, nutrients and their property) of the different bio-enhancers.

3. Ms. Binita Shah has focused on Biodynamic agriculture: A boon for small farmers in India, in this presentation she has mentioned the catalytic power of different biodynamic preparations like BD-500 (cow horn manure), BD-501 (silica powder), BD 502-507 (herbal preparations) and their significance in the composting, Use of biodynamic calendar in agriculture, low cost production unit of organic farming.

In addition to above 03 oral presentations were delivered by

1. Dr. Ranjan Srivastava from G.B.P.U.A.&T., Pantnagar delivered talk on floriculture role in happiness for day to day lifestyle and its potential for ecotourism, revenue and generation.



2. Dr. Pronobesh Chattopadhyay, Scientist F, DRDO, Tezpur, focused on certification of organic inputs and produce.
3. Dr. S. K. Singh (P.S. CISH) provided the detailed information about the ecosystem services in different orchards of subtropical horticulture crops.

#### **Recommendations**

1. Eco-system health can be improved with integration of Homa with biodynamic farming which will be able to mitigate climate abrasions.
2. Concept of on farm production and use of bio-enhancers will enhance the soil and plant health

which will lead to sustainable quality production.

3. Biodynamic agriculture is a boon for small farmers in India, as it is low cost organic farming system in which biodynamic calendar is used for harnessing the cosmic energy in agriculture.
4. Promotion of floriculture industry in the country will lead to create happiness for day to day lifestyle, ecotourism and revenue generation.
5. Certification of off farm based inputs and bio-pesticides should be made mandatory for their quality control.

**Technical session: 8 Success stories in horticulture, farmers' experiences, organic production, extension, horti-business and entrepreneurship, future strategies, Govt. support and policies, women empowerment**

**Chairman: Dr. P. L. Saroj**

**Co-chairman: Dr. S. K. Dwivedi**

**Convenor: Dr. B. N. Hazarika**

**Rapporteurs: Dr. Dinesh Kumar and Dr. Maneesh Mishra**

In this session six lead presentations were made and first presentation was made by Dr. P. L. Saroj, Director, ICAR-CIAH, Bikaner on Farmer-Friendly Technologies for Enhancing Income and Nutritional Security in Arid Region in which he emphasized the eco-friendly technologies for improving the farmers livelihood security. He talked about agro-forestry based farming system approach. Second lead presentation was made by Dr Maneesh Mishra on Impact assessment of diversified horticulture modules in augmenting income of mango farmers. He talked about the diversification of mango orchards with different interventions for improving the productivity of the orchards. In third lead presentation Dr. J. S. Mishra focused upon integrated farming system for increasing farm income and nutritional security of smallholder farmers in eastern region of India. Dr. B. N. Hazarika talked about horticulture issues and challenges in north eastern India. In fifth lead lecture Dr. S. K. Dwivedi pointed out the top ten challenges in future horticulture. In sixth lead lecture Dr. Ratan Kumar talked on present scenario, challenges, opportunities and prospects for

horticulture development in Uttarakhand. Other than lead there were seven oral lectures delivered on different aspects of horticulture production.

**Recommendations**

1. Development of research and development, availability of quality seeds and planting materials, transfer of technology, agri-related infrastructures, banking facilities, organic production, export and marketing linkages are to be done specially in context of NEH region of India.
2. Off-season production of horticultural crops viz; potato, vegetables, flowers, litchi, mango etc and market linkages needs to be developed in hilly region of Uttarakhand
3. Khejri and livestock based farming system needs to be promoted in arid region of India for economic and livelihood security of the farmers.
4. Protected cultivation of horticultural crops needs to be replicated in similar agro-ecosystem in country.



## Technical session 9: Farmers interactions

**President: Sri Shiv Nandan Singh**

**Chairman: Dr. Mangla Rai**

**Co-chairman: Prof. R. K. Pathak**

**Convenor: Dr. Yogesh Mishra**

**Rapporteur: Dr. R. A. Ram**

In this session, progressive farmers of different districts and entrepreneurs were participated. Prof R. K. Pathak has presented talk on cosmic farming, in which he emphasized the role of cow and solar energy in sustainable agriculture production. He urged farmers to respect “Pancha Maha Bhutas” i.e. earth, water, air, fire and ether. Energies from all these sources should be integrated in sustainable crop production. He has also given emphasis on recycling of organic wastes and on farm production of bio-enhancers for sustaining the soil and plant health. Dr. Mangla Rai emphasized upon vertical utilization of space to increase the productivity as cultivable land is shrinking day by day. He also added that incorporation organic wastes and composts in package of practice to rectify the fast

degradation of soils due to imbalance use of agro-chemicals. Sri Shiv Nandan Singh, President, GRY, U.P. urged farmers to reduce air, water and air pollution by adopting cow based organic farming practices. Success stories of the farmers were also presented by the concerned farmers. Sri Satya Deo Singh, farmer from Bundelkhand has presented his success story on organic production. Sri Amarendra Verma an organic grower of Behraich has also presented the success on organic production. Sri Brijesh Verma, Gosainganj, Lucknow has presented success story on honey, propolis, royal jelly and pollen production. Sri Mukesh Kumar, a farmer of Lucknow has presented his success story of mushroom production several other farmers were also shared their success stories





### **Recommendations**

1. Cow based organic agriculture should be promoted with an idea of on farm input production to sustain the yield and quality of production.
2. Balanced use of agro-chemicals is required for reducing the degradation of cultivable land.
3. Success stories of the farmers need to be expanded horizontally for benefits of the other farmers in the areas.
4. Utilization of vertical space available in horticultural crops production need to be focused upon to increase the per unit area productivity/profitability.
5. Exotic vegetables, apiary and mushroom production should be promoted as entrepreneurship development.

## Technical Session: 10 Plenary session

Plenary session was chaired by Dr. Mangla Rai, Former DG, ICAR and Secretary DARE. After formal welcome by Prof. R. K. Pathak, President ISHRD, the rapporteurs of different sessions were presented the outcome of the presentations made by various speakers. Dr. S. Rajan, Director, ICAR-CISH has presented main recommendations of the conclave. The chairman of the session made concluding remarks and urged researchers and planners to focus upon problem based research programme. He has specially mentioned to plan research programmes targeting the future needs.

### Recommendations

1. Optimized use of finite natural resources should be given for priority for sustainable production
2. Use of bio-enhancers needs to be promoted for soil, plant health and insect pest management in

horticulture production

3. Harnessing energy from cosmos, Earth, plant and cow in systematic way should be given priority for sustainable horticulture production and eco-system health. Best practices may be identified based on the scientific data.
4. Management of soil health should be given priority by recycling of crop wastes, livestock based farming, use of bio-enhancers, inter, cover, trap, mix etc cropping for sustainable production.
5. Adoption of new technologies, promotion and expansion of underutilized horticultural crops for nutraceutical, post harvest management, value addition, cold chain management will enhance livelihood and economic security of small and marginal farmers in the country.



## Recipients of Fellowship/Awards of ISHRD

### Life Time Achievement Award (2014-2018)

1. Prof. R. K. Pathak, Former Director ICAR-CISH, Lucknow (U.P.)



### Fellowship of ISHRD (2014-2018)

#### 2014

1. Dr. S. K. Malhotra, Ministry of Agriculture and Farmers Welfare, Commissioner Agriculture GOI, New Delhi
2. Dr. Shailendra Rajan, Director ICAR-CISH, Lucknow (U.P.)
3. Dr. R. A. Ram, Pr. Scientist ICAR-CISH, Lucknow (U.P.)
4. Dr. O. P. Awasthi, Pr. Scientist ICAR-IARI, New Delhi

#### 2015

1. Dr. Sanjeev Kumar, ADG UPCAR, Lucknow (U.P.)
2. Dr. Ajay Sharma, Pr. Scientist ICAR-NRC Grapes, Pune
3. Dr. Rattan Kumar, JD (Hort.) Deptt. of Hort and Fruit Processing, Govt. of Uttarakhand
4. Dr. S. L. Chawla, Assoc. Prof. ASPEE, COHF, NAU, Navsari, Gujarat

#### 2016

1. Dr. B. N. Hazarika, Dean, COH & F, CAU, Passighat, Arunachal Pradesh

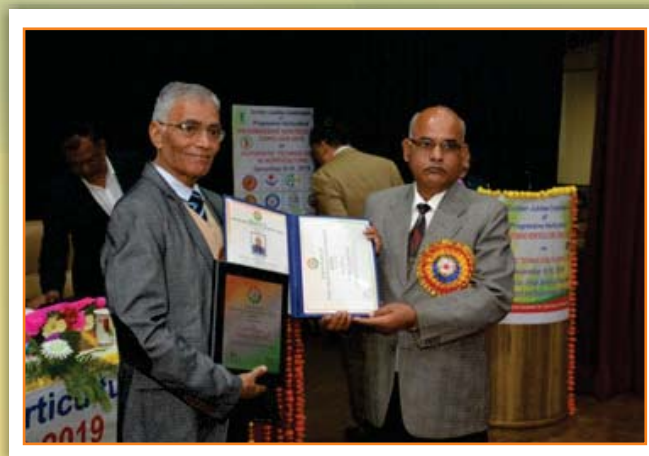
2. Dr. S. K. Verma, Pr. Scientist ICAR-IIVR, Varanasi (U.P.)
3. Dr. R. M. Sharma, Pr. Scientist Division of F&HT, ICAR-IARI, New Delhi
4. Dr. R. G. Somkuwar, Pr. Scientist ICAR-NRC Grapes

#### 2017

1. Dr. B. L. Attri, Pr. Scientist ICAR-Directorate of Mushroom, Solan (HP)
2. Dr. P. C. Tripathi, Pr. Scientist ICAR-IIHR, Bangalore
3. Dr. Tribhuvan Chaubey, Pr. Scientist ICAR-IIVR, Varanasi (U.P.)
4. Dr. M. K. Verma, Pr. Scientist Division of F & HT, ICAR-IARI, New Delhi

#### 2018

1. Dr. Sanjay Pathak, Professor N.D.U.A. & T., Ayodhya (U.P.)
2. Dr. B. D. Bhuj, Professor Deptt. of Hort., GBPUA&T, Pantnagar
3. Dr. T. Stobdan, Scientist-E DIAHR, DRDO, Leh
4. Dr. K. K. Singh, Dean College of Hort., Dr. RPCAU, Samastipur, Bihar





### Best Teacher Award of ISHRD (2014-2018)

#### 2014

1. Dr. Harihar Ram, Retd. Prof. GBPUA&T, Pantanagar

#### 2015

1. Dr. (Mrs.) Shashikala Beura Deptt. of Floriculture & Landscaping, Prof. & Head OUA & T, Bhubhaneshwar

#### 2016

1. Dr. Ranjan Srivastava, Professor College of Floriculture, GBPUA&T, Pantanagar

#### 2017

1. Dr. Jitendra Singh, Professor COH&F, Jhalawar, Rajasthan

#### 2018

1. Dr. V. K. Tripathi, I/C Head Department of Horticulture, CSAUA & T, Kanpur
2. Dr. Ashok Kumar Pandey Head, Department of Horticulture, Janta College, Bakewar, Etawah 206127 (U.P.)



### Himadari Young Scientist Award (2014-2018)

#### 2014

1. Dr. Patil Sudha Dilip, Asstt. Prof. ASPEE College of Horticulture & Forestry, Navsari, Gujarat
2. Dr. Jaydeep Halder, Scientist ICAR-IIVR, Varanasi (U.P.)

#### 2015

1. Dr T. K. Koley, Scientist, ICAR Complex for Eastern Region, Patna
2. Mr. Muneeb Ahmed, Asstt. Prof. SKUAST, Srinagar, Kashmir

#### 2016

1. Dr. Ajitabh Bora, Scientist DRL, DRDO, Tejpur, Assam

#### 2017

1. Dr. Tejpal Singh, SMS V. C. S. G., Uttarakhand University of Agriculture, Bharsar, Uttarakhand

#### 2018

1. Dr. Sudip Kumar Dutta, Scientist ICAR-RC-NEHR-Sikkim

### Dev Bhumi Bagwani Purskar-Best Horticulture Farmers (2014-2018)

1. Mr D. B. Desai, Banana Farmer Bharuch, Gujarat
2. Mr. Neelam Dutta, Organic Farmer Pabhoi Greens, Biswanath, Assam
3. Mr. M. D. Padadalli Yadgir, Karnataka
4. Mr. Kundan Singh Panwar, Tehri, Uttarakhand

#### Temperate fruit grower

5. Mr. Gopal Dutt, Almora, Uttarakhand
6. Mr. Khushi Ram Tehri, Uttarakhand
7. Mr. Mukesh Kumar Pareek, Khichiya, Bikaner, Rajasthan

#### Arid vegetable grower

### Dev Gangotri Udyamita Purskar-Model Horti Business (2014-2018)

1. Mr. Stanzin Sonam, Domkhar, Khalsi, Leh-Ladakh, Organic Apricot Processor
2. Mr. Manmohan Bhardwaj, Bhagwanpur, Haridwar, Mushroom and Flower grower
3. Mr. Digvijay Singh, Khajuwala, Bikaner, Rajasthan, Nursery entrepreneur
4. Mr Arujun Khanna, Mathura Road, Faridabad, Haryana, Product development and marketing of seabuckthorn

### Budding Scientist Award (2014-2018)\*

1. Ms Mujeeb Farima Integral University, Lucknow
2. Dr. Mukesh A. Patel ASPEE College of Horticulture & Forestry, Navsari
3. Dr. Tatee Sumathi College of Horticultural Sciences, Anantapur, (A. P.)
4. Dr. Anjana Kholia CAU, Jhansi
5. Dr. Anurag Bajpai School of Agril. Sciences, RIMT Univ, Punjab
6. Mr Wani Muneeb Ahmad SKUAST, Srinagar, Kashmir
7. Dr. T. V. Anuparna KAU, Kerla
8. Dr. Ankit GBPUA & T, Uttarakhand
9. Dr. Veena G. L., CISH, Lucknow

### Best Extension/Development Award (2014-2018)

1. Dr. Akhilesh Kumar, JNKVV, College of Agriculture, Rewa (M.P.) Scientist Plant Protection
2. Dr. Narendra Kumar, Chaubattia, Almora, Uttarakhand, Chief Horticulture Officer
3. Dr. Bireswar Sinha, Asstt. Prof. COA, Deptt of Pl. Pathology, CAU, Imphal.
4. Mr M. B. Tripathi, SSDA, Nayiapar, Khurd, Gorakhpur (U.P.), Agro based livelihood promoter





**PROGRESSIVE HORTICULTURE CONCLAVE (PHC)-2019**  
**ON**  
**FUTURISTIC TECHNOLOGIES IN HORTICULTURE**  
**December 8-10, 2019**

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