

CHA
Annual Report
2015-16



CHAI

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CONFEDERATION OF HORTICULTURE ASSOCIATIONS OF INDIA

(An ISO 9001:2008 Certified Organisation)

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Published by

Confederation of Horticulture Associations of India

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Correct Citation

Annual Report

Confederation of Horticulture Associations of India

New Delhi

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Publishing Partner

Westville Publishing House

B-5/47, Paschim Vihar, New Delhi-110063

Tel: 011-25284742; Mob. 09868124228

Email:westville_2002@yahoo.co.in

FROM THE DESK OF THE FOUNDER AND CHAIRMAN



Confederation of Horticulture Associations of India (CHAI), is a consortium of experts, scientists, associations, corporate sectors, institutions, societies/associations, farmers and other stakeholders, to work together in mission mode, with set goals and objectives. The CHAI is striving hard to achieve technology-led development through dissemination of knowledge by publishing Journal (International Journal of Innovative Horticulture), newsletters, books and reports and has been providing technical solutions to the problems, and also guidance to take up planning and implementation of the projects, besides, partnering and supporting the conferences and workshops.

To recognize the contributions of various stakeholders, CHAI has instituted, **Honored Fellow Award** for leadership of par excellence in Indian agriculture. **Life Time Achievement Award** for the leaders in horticulture; **Dr. R.S Paroda Award** for excellence in research; **Dr. B.H. Jain Award** for excellence in dissemination of knowledge and **RamnandanBabu Award** for excellence in farming. **Honorary Fellowships** are conferred for the outstanding contributions of the individual in management of research for the development. Besides, Corporate fellowship, NPO fellowships, Institutional fellowship, Associationfellowship and fellow of CHAI are conferred for their commitment to the furtherance of agriculture or horticulture. **Dr. Ray Best Dissertation Award** is given to selected student for their research and a **Best Paper Award** is also given to the author of the best scientific article published in IJIH, adjudged by academic council. **Life Time Achievement Award** was conferred on Dr Augustine B Molina, Bioversity International, Philippine, Dr. S K Malhotra, Horticulture Commissioner was conferred with **Dr. R.S. Paroda Award** for 2015. Dr. M R Hegde , Principal Scientist, IIHR, Bangaluru, received **Dr. B.H. Jain Award** for excellence in knowledge dissemination and Mr. Sudhansu Kumar, farmer of Samastipur received the **RamnandanBabu Award** for excellence in farming. **Honorary fellowship** was conferred MrSurjitChaudhary, Secretary to Government of India and Dr. A K Singh, DDG, ICAR for their contributions and commitment to agriculture and horticulture.

The year 2015-2016 has been eventful in terms of activities. The publication of International Journal of Innovative Horticulture vol. 4(1&2), 2015 was done and volume 5 is in processing for publication. The Journal has received the NAAS rating of 2.87. I am happy to state that, the CHAI Year Book-2015 with updated information on fellows was brought out, besides the publication of a book of Awards and Fellowships-2015. The CHAI continued to participate in exhibitions and support the conferences. During the year, the CHAI was a major partner in organisation of National Conference on Smart horticulture for livelihood and rural development, held at MGCGV, Chitrakoot, MP from 28-31st May 2014. An International National conference was also organized at Pune, in collaboration with Media Today group, on 27 February, 2015 with theme floriculture development. The CHAI also partnered with the ASM Foundation in organizing the KisanSangosthi, in three districts for the benefit of farmers by facilitating the participation of scientists as resource speakers. A two day conference organized at NOIDA on 2-3 March, 2016 was also partnered. During the year 2015-16, 16 fellows have been enrolled. The Chairman, as a chairman of ASSOCHAM Council on Agriculture and Food Safety, facilitated the organization of many conferences on the them of food and nutritional security. He was a panelist in many of round table discussions organized by FICCI, Economic Times and Media Today. He also delivered many key note lectures. The CHAI also announced various awards for the year 2016, nominations were received and awardees have been finalised. The awards and fellowship will be conferred in AGCM of CHAI. It is a matter of satisfaction that the CHAI is moving forward in achieving the mission and vision, to meet the aspirations of the people. The CHAI is certified for the ISO 9001:2008, for its work.



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I, as a Chairman of CHAI, feel immensely happy with progress of the organization, which would not have been possible without your active support and cooperation of the fellows. I acknowledge your support and envision for the CHAI, to be a vibrant and responsive organization, to serve the mandate and provide strategic solutions to emerging issues in the development, through collective wisdom and technical support. I am presenting the **5th Annual Report**, and look forward to get your kind cooperation for the furtherance of Horticulture/Agriculture. Finally, I thank all those, who helped the CHAI, directly or indirectly in delivering its objectives and moving forward.

Dr. H. P. Singh

The Founder and Chairman



EXECUTIVE SUMMARY

In the scenario of increasing hunger, malnutrition and challenges of climate change, horticulture (fruits, vegetables, flowers, plantation crops, spices, tuber crops, mushroom, medicinal and aromatic plants, landscape gardening, apiculture, sericulture *etc.*), has assumed greater significance for food, nutrition, healthcare and environmental services, and above all, the economic development. Nevertheless, there has been a rapid stride in the development of horticulture, but much has to be achieved to feed and provide healthcare to the growing population, expected to be 10 billion by the end of 2050. Thus, in order to ensure food and nutritional security to growing population, with declining land and water, technology generation, dissemination and adoption becomes inevitable, not only for horticulture but also for livestock, fisheries and crops. In this context, a forum, which brings scientists, associations, corporate sectors, institutes and organisations, farmers and various stakeholders together, to work in mission mode with set goals and objectives is essentially inevitable for addressing the challenges and meet the needs of the growing population. Accordingly, **Confederation of Horticulture Associations of India (CHAI)** is complimenting the efforts for the furtherance of horticulture/agriculture research, education and development by bringing organisations and individuals to work together to achieve the goal of technology-led development and provide solutions to the problem in addressing some of the issues through national and international consultations, developing policy papers, recognising services of scientists, farmers and students.

The year under report, 2015-2016 has been an eventful in the terms of activities of the CHAI. The publication of Vol.,4 issue 1&2 2015 was completed and circulated, which contains scientific original research papers and review articles on topical issues. The Journal also received recognition from NAAS by giving rating of 2.87. The papers for Volume-5 (1) has been processed. The CHAI Year Book-2015 with updated information on members, guidelines for awards and publication of articles was brought out and released.

Based on nomination received, the scientists, farmers, students were selected for the conferment of awards, which were given during AGCM of CHAI held on 29th May 2015 at MGCGV, Chitrakoot. The Awards and Honorary Fellowships were given by Chief Guest during the inaugural function of the Global Conference supported by CHAI, held at MGCGV, Chitrakoot, on 28th May 2015, The Life Time Achievement Award-2015 was conferred on Dr. A.B. Molina, BAPNET, BioversityInternational, Philippines for his exceptionally outstanding contribution and leadership in horticulture. Dr. S.K. Malhotra, Agriculture Commissioner, Govt. of India, New Delhi received Dr. R.S. Paroda Award- 2015 for excellence in research leading to innovations. Dr. B.H. Jain Award-2015 was conferred to Dr. M.R. Hegde, Principal Scientist, IIHR, Bengaluru, for his contribution to teaching and dissemination of knowledge. ShriSudhansu Kumar, Farmer, Nayanagar, Samastipur, Bihar, received the RamnandanBabu Award-2015 for his innovation in farming and promotion of new technology. Honorary Fellowship was conferred on ShriSurjitChaudhary, Secretary, C&PC, Govt. of India, MoCF, New Delhi and Dr. A. K. Singh, D (Extension), ICAR, New Delhi for their outstanding contributions to research and development of horticulture/Agriculture.

Recognising the importance of flowers, both in Indian market and export, the CHAI organized an International Symposium on Floriculture, 27th February, 2016, Pune. The theme of the symposium was the furtherance of floriculture. The speakers in the symposium were expert in the field with international repute, which provided opportunity to learn, provide inputs for policy frame work and develop network for floriculture. CHAI also partnered in the organization of three KisanSangosthi, organized by ASM Foundation in Samastipur, Muzaffarpur and Sitamadhi. Districts in Bihar, by facilitating the participation of scientists as resource speaker, for the benefit for the farmers. The Chairman, facilitated many interactions as panelist in the conferences / symposium organized by ASSOCHAM, CII, & FICCI.



The CHAI partnered, the National Conference on Dynamics of Smart Horticulture for Livelihood & Rural Development, organized by ASM Foundation at MGCGV, Chitrakoot, Satna, in collaboration with Mahatma Gandhi Gramodhya Vidhaya (MGCGV), Chitrakoot, Satna from 28-31 May, 2015. As a Chairman of ASSOCHAM Council on Agriculture and Food safety, Dr. H.P. Singh also facilitated the organization of various meetings and conferences related with agriculture food and nutritional security. The Chairman participated in Global, international and national Symposium/ conferences to deliver keynote lecture and Chair the technical sessions. He was participant to Israel Agri-tech and also in the Info- Israel meeting organized by CII. The CHAI also partnered a conference organized by Geo-Agri, on 2-3 March, 2015 at NOIDA with a theme, Empowering Indian Farmers with Technologies.

The CHAI assisted ASM Foundation in organization of the Global Conference on Furtherance of Perspective and Future Challenges in Agriculture, being organized at Jain Hills, Jalgaon. The CHAI is bringing out various publications namely Book of Abstract, Shodh Chintan, Award and Awardee. The agenda for the 5th AGCM has been prepared including the publication of year book-2016 and also Award and Fellowship. The CHAI has partnered in organization of a National Conference on Pomegranate.

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ABOUT THE CHAI

Confederation of Horticulture Associations of India (CHAI), an ISO 9001:2008 certified non-profit organisation, established during 2010, is committed for the furtherance of horticulture/agriculture research, education and development, through bringing organisations and individuals to work together in mission mode. CHAI is striving hard to achieve its goal of technology-led development by exploring and providing innovative solutions. CHAI is working on horticulture and agriculture tirelessly with set goals and commitments. It conducts and organizes various national/international/global conferences and workshops for the exchange of information and knowledge to develop the strategies for addressing the emerging concerns with scientific solutions. For the dissemination of knowledge, the CHAI brings out various publications like Books, Journals, Reports and Newsletters. **International Journal of Innovative Horticulture**, which publishes scientific articles, short notes, review articles and case studies and is brought out six monthly. To promote innovative ideas, the CHAI has instituted many awards which inspire individuals and teams for the innovations and excellence. The CHAI offers various categories of subscription i.e. organization, associations, corporate, NPO and individual. The CHAI is headed by Dr. H.P. Singh as The Founder and Chairman, who is well known globally for his outstanding contributions to horticulture/agriculture research, education and development. The CHAI established its units in many states to serve agriculture/horticulture at regional level also.

Mission

CHAI is committed for the development of agriculture/horticulture by providing solutions to the problems, utilizing the services of talented experts in the field of agriculture/ horticulture, and disseminate the knowledge.

Vision

The vision of the CHAI is to bring synergy among different societies/associations, experts and entrepreneurs to encourage effective participation of all stakeholders for accelerating the economic growth through technological interventions and human resource development.

Goal of CHAI

The goal of CHAI is to play a catalytic role, in addressing the concerns of food and nutritional security, through interventions of technology-led agriculture / horticulture development.

Aims and Objectives of CHAI

- Furtherance of agriculture / horticulture through improved cooperation by integrating scientific study, education and knowledge exchange of biological, ecological, environmental, sociological and economic issues that affect agriculture / horticulture.
- To catalyze the efforts of development by creating associations for interaction among all agriculture/horticulture societies/ associations, growers, entrepreneurs, policy planners and activists through consultations, organisation of seminars, conferences, meetings, national dialogue and trainings.
- To establish, promote, run, maintain and support the community for the promotion in advancement of agriculture/horticulture, and to serve as an apex organisation concerned with promotion of agriculture / horticulture, having linkages with various commodity/ input, organisations, institutes and Governmental and Non-Governmental organizations.
- To establish education and training institutions for human resource development and skills up gradation for meeting the needs of empowered human resource.



- To recognize the services of people in horticulture through incentives, awards and encourage the scientists for their participation in national and international events.
- To establish education and research institutions and provide expert guidance to organisations as well as individual to capitalize on the strength and build human resource.
- To take up all the activities, deemed to be fit, in achieving goals and mission of the Confederation for furtherance of horticulture/agriculture for economic developments.

Initiatives of CHAI

The confederation has successfully organised and supported national and international conferences, workshops and national consultations and, services in education, and is providing solutions to the problems. Awards and Fellowships are instituted to recognise the contributions of scientists and other stakeholders in the research and development in the country and also abroad. The Confederation has instituted various awards, which includes Honored Fellowship for leadership of par excellence, Life Time Achievement Award for distinguished life time contributions in horticulture, Honorary Fellowship for noticeable contributions, and commitment to furtherance of horticulture, Dr. R. S. Paroda Award for Excellence in research and academics. Dr. B.H. Jain Award for excellence in transfer and diffusion of technology and Ram Nandan Babu Award for excellence in farming. CHAI Fellowship is conferred to members for their commitment in furtherance of agriculture/ horticulture. JISL fellowship is provided for training abroad to meritorious members. Considering the needs for dissemination of science based knowledge among scientists for the furtherance of agriculture/ horticulture science, an International Journal of Innovative Horticulture (IJIH) is also published besides newsletter and books, which has over whelming response. To encourage the students, the CHAI has instituted Dr. D. P. Ray Best Dissertation Award for the students who have completed masters and Best Paper Award for scientific article published in IJIH, are also awarded.

Strength of CHAI

- The CHAI has wide spectrum of experts, who are enrolled as fellow to support the technology-led development and provide strategic expert advice.
- The Chairman, having held the position of DDG, ICAR; Vice-Chancellor, RAU, Pusa; Horticulture Commissioner, Govt. of India and many other positions, known nationally and internationally in the field of research, education and development has expertise in horticulture, water management, nutrient management, quality seed and planting material production and above all coordination, planning and execution of project and education.
- More than 230 fellows of CHAI have expertise in various aspects of agriculture/ horticulture.
- Besides, the fellows, more than 100 experts in different fields from India and abroad are enrolled with CHAI.
- CHAI has offices in Delhi, Patna, and Bangalore and also in Dubai to attend to all the types of work for business solution options.
- The CHAI is also a non-profit company, and has established network with institutions, academy, corporate, business house, NGOs and also International organizations.
- The network of CHAI, expertise of skilled fellow and standing experts makes the confederation to offer knowledge and its management strategies for modernising agriculture/horticulture and serve the nation.

Activities of the CHAI for the Year 2015-16

1. Organization Support and Organization for International / National / Seminars/ Conferences / Workshops

In the recent past CHAI, has supported many international and national conferences. During the year, 2015-16, CHAI was partner in many conferences, workshop and Symposium. The CHAI organised one international and two national conferences and Kisan Sangosthi, The outcomes of these conferences and workshop are:

1.1 National Conference on Dynamics of Smart Horticulture for Livelihood and Rural Development

This National conference was organised in collaboration with the Confederation of Horticulture Associations of India, by the ASM Foundation, New Delhi and MGCGV, Chitrakoot, Satna, Madhya Pradesh, from 28-31st May, 2015, with the support of Jain Irrigation Systems Ltd., Jalgaon and Horticulture Society of Madhya Pradesh. The conference was participated by the all stakeholders, which included eminent scientists, corporate representatives, extension workers, policy planners, farmers and students. There were about 520 registered delegates, besides guests and invitees. Technical deliberations were organized in 17 technical sessions, besides inaugural and plenary session. A session for farmers was also organized. Based on discussions and deliberations the following recommendations emerged are:



1. Considering that, the young students and the farmers are future of the nation, there is a need for inculcation of the spirit of patriotism through education, secured health, economic upliftment and social values. Life has its beginning and its maturity comes into being when an individual rises above self to something greater for the country and community and is a must, for improving quality of life in rural areas.
2. While making a program of livelihood and rural development, strategies should be considered to formulate innovative packages of options based on past experiences, to promote improved and

innovative livelihood options. In this context, horticulture has emerged as one of the options, considering that it is economically rewarding and intellectually satisfying and has potential to provide better employment and involves more women in the diverse activities. Therefore, technology-led development should be the priority option for rural development.

3. Though, horticulture is one of the ways to provide food, nutrition, healthcare, environmental services and is also an option for livelihood and rural development, limited efforts have been made in this direction. There is a need for diffusion of technologies with commensurating investment and also enabling the policy environment. Many horticultural crops especially perennial fruit trees, spices and plantation crops have a major role to play in carbon sequestration, containing GHG and mitigating climate change. Therefore, promoting horticulture would be an option to address the challenges in rural area.
4. The National conference recognized that the horticulture has moved from rural confine to commercialization in five phases of growth, which is called currently, the Hi-Tech horticulture, widely employed for the profitable commercial production of horticultural products and now has to shift to Smart Horticulture. In the last 25 years, the horticulture has created impact in terms of production, productivity, availability and export of horticultural produce, yet the pace of growth are not in commensuration with the desired growth for want of dynamic technologies, skills and developmental strategies. Therefore, strategic approaches are needed which shall enable to produce more with fewer inputs.
4. Smart Horticulture, is an integration of modern **technologies** with the latest **scientific** knowledge, in consonance with socio-economics, complemented with information technology to address the emerging issues of enhancing productivity related to food, nutrition and environment services. This is essential to produce more with lesser inputs. Thus, needs urgent attention for its promotion through research and development, with a spotlight on rural development.
5. Smart Nutrient Management system recommends the nutrient requirement of fruit crops on the basis of general nutrient uptake by the plant and further adjusts the dose on the basis of targeted yield and the level of nutrients already available in the soil, soil pH, bulk density, organic carbon content, etc. by analyzing and interpreting the soil, water and tissue (leaf) analysis report of the farmer's field. It also takes the antagonistic and synergistic interaction among nutrients into consideration. The system economizes the nutrient needs and gives optimum targeted yield. Therefore, more intensive research is needed to make the system adoptable by the farmers.
6. Increasing the use of chemical fertilizers, while degrading the soil health at the same time has significantly contributed in the buildup of greenhouse gases. Use of biofertilizers can reduce the application of chemical fertilizers and increase crop productivity and help in reduction of the buildup of greenhouse gases. Organic farming could be very much adapted to climate smart horticulture, which will provide a high degree of diversity in the ecosystem. Therefore, work on microbes and its application in soil as well as for management of soil health have to be intensified.
7. INM, improving planting stock, organic farming, trap crops, bio-control measures high-tech nurseries and improving productivity has to be emphasized to boost the production in horticultural crops and also to mitigate the effects of climate change. Research on cropping schedule of different horticultural crops should be intensified in the climate changing and be rescheduled, if required. With advancement in technology, it has been possible to grow various crops out of season.

Therefore, there is a need to develop cultivars and production technologies, which can suit well for industrial production under controlled climate and light conditions.

8. High density and multiple cropping systems should be encouraged. Poor plant architecture and canopy management lead to low production in fruit crops. Modern systems of architecture engineering, comprising of framework creation and management through crop pruning leads to good light interception in orchard that increases yield and improves quality. This is becoming essential for harnessing the natural resources more appropriately. Consequently, rejuvenation of old orchards of mango and sapota through plant architectural engineering and canopy management, improves fruit yield as well as fruit quality. Therefore, work on plant architecture must be intensified.
9. Integrated approach towards the management of pathogens is needed. Practices such as crop rotation, application of micronutrients, soil pH management, exploitation of bio-agents, weather based monitoring of plant diseases and rapid diagnostics are some of the important and emerging components of this holistic approach. Therefore, strategies have to be developed for smart management of biotic stress, on the principle of observe, measure and respond to achieve maximum output and result.
10. Training programs based on high-tech horticulture at district level are necessary for HRD and capacity building awareness among growers intending to enter greenhouse cultivation. These trainings can be arranged at state agricultural universities. There is a need of collaborative HRD interventions amongst the SAUs, Ministry of Labour and Employment and renowned Corporate Houses to groom the agriculture and allied discipline students to face the challenges of the ever competitive globalised era.
11. Modified Integrated Pest Management (IPM) technology, incorporating all possible and available pest control techniques to keep pests below economic injury level (EIL) is strongly needed in climate smart horticulture having greater emphasis on weather data, crop phenology, physical and mechanical methods, agronomic techniques, use of trap and border crops, non-pesticidal management, need based chemical management and economics. Intelligent Pest Management should therefore, be incorporated in climate smart horticulture.
12. Proper post-harvest practices including pre cooling, grading and packaging of horticultural produce should be followed to prevent the post harvest losses, which are at present to the tune of 20-40 per cent. Steps must be taken therefore, to formulate the policies for proper and efficient handling and transportation of such perishable produce. Surplus horticultural production should be processed and awareness should be generated among consumers regarding the health benefits of such products.
13. There is a need to promote and support urban and peri urban horticulture. The carbon credit scheme should be extended to vertical gardens. Trees furnish live green technology to suffice environmental moderation with cooler, healthier and aesthetic touch in urban life. Tree plantation should be encouraged in the residential as well as private and public urban neighbourhoods. Interior scaping with indoor plants should be increased in homes and offices, as these are found to be linked with improved indoor air quality and better human health.

14. In the scenario of limited space due to rapid urbanization and demand for fresh fruits and vegetables, hydroponic/aeroponics provide an option for quality production which should be adopted so that each person can have a small garden at his or her place.
15. Education System in horticulture has changed in last 25 years, from a Department of Botany to the Department of Horticulture, to College of Horticulture and now to Horticulture Universities, but mind set do not commensurate with a needed development. There is dynamism in technology, skills and development strategies across the globe. Therefore, education system in horticulture need revisit to develop a strategic program and course curriculum in a manner that brings the needed human resources for fast developing horticulture.
16. To serve the environment, a programme on environment horticulture like developed countries is essentially required. B Tech and MBA in horticulture have been implemented successfully in few universities, which need intensification through logistics, skilled manpower and infrastructure. As a result, horticulture education needs immediate attention, to meet the emerging needs of empowered human resources.
17. Institutional support system linked with public and private enterprises would be essential. A concerted effort with identified purpose evolving all the stakeholders, keeping the technology at driving seat and farmers as centre of attention, would definitely help in achieving faster and inclusive growth.
18. Rural-urban division is widening in terms of access to facilities and livelihood options. Rural people are much more dependent on agriculture and allied sectors for livelihood. Therefore, conservation of natural resources, improvement of farm profitability through technology-led development and generation of additional market-driven and value added non-farm source of incomes could be an approach for rural development. In this context, smart horticulture provides an opportunity and needs persuasion in integrated manner for ensuring livelihood security.

1.2 Interaction Meeting with Farmers

The CHAI facilitated the interaction of the farmers with Mr. Surjit Chaudhary, Secretary to the Government of India, Department of C&PC, MoCF, to have learn from his long experience in agriculture in various capacities on 29th May, 2015. The Session was chaired by Dr. H. P. Singh, Chairman, CHAI. Dr. A.R. Pathak, Vice-Chancellor, JAU, Junagardh and Dr. N.C. Gautam, VC, MGCGV co-chaired the session. After a brief introduction by Dr. H. P. Singh, about the objective of the session Mr. Chaudhary shared his experiences in working with farmers for adoption of Precision Farming, particularly with horticultural crops in Tamil Nadu, and said that the approach was more effective in increasing output in relation to input resulting in higher profitability. He further added that there is a need for change in mindset of scientists, extension workers and policy planners to make agriculture a respectable enterprise. Otherwise, farmers may leave farming. He also cited an example and emphasized upon improving the productivity of water through micro irrigation and suggested for the use of greenhouse technology to improve the productivity. Dr. Singh thanked Mr. Chaudhary and requested the farmers to put forward their questions. Questions of farmers and other delegates were eloquently answered and clarified by the secretary. Finally, it emerged that precision farming with visionary mindset would address many of the challenges being faced by the farmers. The session concluded with vote of thanks to the chair by Dr. N. C. Gautam, Vice Chancellor, MGCGV, Chitrakoot.



1.3 Workshop on Banana for Improving Productivity

In order to have effective interaction with the farmers of UP and MP, a workshop was organized on 29th May, 2015, in collaboration with ASM Foundation, was attended by over 100 banana growing farmers. The session was chaired by Dr. S.S. Mehta, President, All India Aonla Grower Association, Salem, Tamil Nadu. Dr. B.K. Pandey, Principal Scientist, ICAR and Dr. Babita Singh, Former Professor, Amity University & Director, CHAI, New Delhi were co-chair in the session. Mr. KuldeepSrivastava, NRC, Litchi, Muzaffarpur was the convener. The session started with introductory note by chairman, who explained the importance of the session, which is aimed to transfer a practical knowledge to the farmers. Co- chairs also introduced the subject and said that they will interact with farmers as per the area under discussion. Further the concept was eloquently presented by Mr. K.B. Patil, JISL, Jalgaon. Dr. H.P. Singh, Chairman CHAI, in his Plenary lecture - **Potential of Banana Cultivation in Subtropical Region of India**, said that, banana can be highly profitable crop, if appropriate care is taken. Main risk is prevailing low temperature during December-January which can be adjusted by time of planting and appropriate care with respect to mat management. He also shared his experience of bringing banana to North Eastern region, way back in 1979, experimented at Ranchi. Thereafter banana is a success story in Bihar. At the time drip irrigation and tissue culture technology was not available. These technologies have further given a boost for banana production. He also cautioned that only disease free planting material from recognized nurseries should be taken. Fertigation should be adopted, and for this purpose appropriate system be adopted for uniform distribution of nutrients and water, which are more critical. Leaf production of 4.5 to 5.0 should be maintained for optimum yield. He also answered to the questions of farmers related to improving quality and also the question related to policy. Dr. K. B. Patil, in his concept presentation explained in details about various operations in successful production of banana in subtropical region. Besides explanation on water and nutrient management he also explained about pests and diseases.



He further explained about bunch management, number of hands to be kept, deflowering and bagging. He also described about post harvest management and ripening. Mr. Patil answered in detail, all the question of farmers to their satisfaction. Finally, chairman concluded with appreciation for such a meeting and thanked the farmers for their participation, He also thanked the organizers. The chair and co-chair and speakers were presented with the certificate of appreciation.

1.4 KisanSangosthi for Technical Support to the Farmers, Samastipur

The Chai partnered the Kisan Sangoshti organized by ASM Foundation with an aim for empowering the farmers with knowledge and skills in horticulture, one day KisanSangosthi, organized by ASM Foundation at Mahamada (Pusa, Samastipur) on 3rd September 2015 by facilitating the participation of scientist as resources speaker in the conference. Aim of Sangosthi was to use new knowledge among the farmers for the promotion of technology led development of agriculture. The sangosthi was attended by more than 100 farmers from different districts, namely Muzaffarpur,



Samastipur, Darbhanga and Champaran. Among the technical experts who attended the Sangosthi were Dr. H.P. Singh, Former DDG (Horti.), ICAR, Dr. R. K. Mittal, Vice Chancellor, RAU; Dr. G. Trivedi, Chairman, ASM Foundation and Former VC, RAU, Pusa; Dr. Birpal Singh, Director, CPRI, Shimla; Dr. Vishal Nath, Director, NRC, Litchi, Muzaffarpur; Dr. Manoj Kumar, Head, CPRS, Patna' Dr. K.K. Kumar, Former Director NRC Litchi. Many scientists, ICAR, Institutes and RAU Pusa also participated in the Sangosthi and delivered their expert advice to the farmers.

The programme started with welcome to the guests and participants by Sh. S.P. Singh, Director, (Operation), ASM Foundation. He spoke about the activities of the Foundation and also highlighted the challenges in Agriculture. He opinioned that, technology provided by the Institutions shall help in sustained in the growth in Agriculture. Thereafter, Dr. R .K. Mittal, Chief Guest of the Function spoke about the activity of RAU, Pusa and briefly told about new varieties and technology developed by the Universities. He also described about various demonstrations taken up in the farmers' field and told that these demonstration have shown the yield gain much higher than state average. He also informed about initiatives taken by RAU to honor the farmers for their Technical innovation. He also distributed tissue cultural Banana plants to the famers, provided by the Jain Irrigation Systems Ltd. Jalgaon.

Dr. Birpal Singh, Director, CPRI, Shimla, spoke about potato production and highlighted the importance of good quality seeds. He mentioned about varieties identified for this Zone namely, KufariLalit, Chip sona etc. and said that farmers should take seeds from authorized sources to ensure the quality of produce. He mentioned that network of farmers can take up quality seeds production of potato by obtaining breeder seeds from CPRS, Patna and making foundation1 , foundation 2 and certify seeds. He also emphasized on appropriate nutrition and water management and said that grading and shorting are essential after harvest to improve the self life. He suggested for taking up processing of potato specially chips and French fries on small scale by networking of young women.

Dr. Vishal Nath, Director, NRC, Litchi, Muzaffarpur speaking on the occasion, described in details the practices to be adopted for improve production of Litchi. He highlighted about the rejuvenation of old orchards to improve the productivity. During the discussion he pointed out about appropriate harvesting and handling to get better price. Sh. Sudhanshu Kumar, A progressive farmer of Samastipur district said his experience regarding drip irrigation in litchi production. He said that by adoption of drip irrigation with sprinkler, during the maturity of Litchi has improved the production and productivity. During the year, many of the farmers could not get benefit in litchi but he succeeded in getting higher financial return with the appropriate management including drip irrigation. He told about maize production, which he has success to harvest up to 10 ton / hectare. He also replied to many of the questions raised by the famers. Dr. Devendra Kumar, Professor of RAU, Pusa spoke about the Management of weeds in crops and said that when the weeds are not appropriately managed the yield is drastically reduced. He described about the various methods of weeds management including use of weedicides. However he cautioned that only recommended weedicides may be used, otherwise it may be decrimental not only for crop but also for the environment. Dr. S. C. Rai, Dean, College of Fisheries, spoke about the fisheries in the Bihar and said that by appropriate Management of fisheries famers can get higher return. He said that major production constraint is the availability of quality fingerlings. He described in details about fingerlings production and management. Further he described the production management system and said the Katla, Mangur, and Rohu, which have different habitat system can be grown together for better economic returns.

On the request of Dr. G. Trivedi, Dr. H.P. Singh also spoke on the occasion. He dwelled upon horticulture development in the country and said that innovation in horticulture can improve the quality of life people in Bihar. He also highlighted five programmes for improving the economic return on farm. These are beekeeping, vermin-composting, seed production, mushroom production and integral farming system. He describes all the five programmes in details. Further he also informed about the technical development in horticulture and said that by adoption of the technology, life of farmers can be transferred. He briefly described about hi-tech banana production system. He also told the farmers to get together for better marketing of their produce. Progressive farmers of West Chamapran, ShLalan Singh a farmers from Sakara and Sh. Dinesh Kumar shared their experiences regarding adoption of the technology and their benefit. Sh. Lalan Singh said that he has been adopting new technology and new crops like floriculture which has benefited him immensely. Sh. Disnesh Kumar said that the life of the farmers of Hitkari club has changed through adoption of technology and he has immensely benefitted through association with ASM foundation. Miss Bimala Singh, Managing Trustee, ASM foundation thanked all the famers for their participation. She also spoke about the commitment of the ASM foundation for improving the quality of life of the poor through various activities.

Dr. G. Trivedi, Chairman, ASM Foundation briefly desired the activity of the ASM Foundation since its inception and said that large number of farmers have been benefitted. He said to the farmers to adopt new technology by consulting the expert which can benefit them immensely. He also said that the Foundation organized various meetings and seminar for the benefit of farmers occasionally and mention about the conference organized at Chitrakut. He also inform about the global Conference to be organized on 28-31 May 2016 at Jalgoan, and request the farmers for their participation. Jain Irrigation Pvt. Ltd is an exemplary for agriculture revolution farmers can take advantage. Sh. S.K. Sinha, Area Manager, Jain Irrigation System Limited, Patna, spoke about the economic use of water through the drip irrigation. He discussed about various system of Irrigation. He also spoke about the system of drip irrigation for all

categories of farmers, small holder and larger farmers. He also said that through drip irrigation we can save 50% water, 50% fertilizer and thereafter we can increase 50-60 % yield. Mr. Manoj Kumar, Agronomist, Jain irrigation system Ltd., described in details about the production system of tissue culture Banana which included development of land, nutrients , weed management, plant management, bunch management and after care. He said that the adoption of tissue culture of banana yield level can increase to 80-100% . The farmer can get to the net return of 121.5 lack /year. After Technical session the farmers were got the plant of tissue culture Banana supplied by Jain irrigation system. A total 700 plants were distributed. The meeting was moderated by Mr. Binod Ananad, CEO, CHAI, New Delhi, who spoke on aims and objectives of Sangosthi and briefed the gathering from time to time about the exerts views during technical discussion. The meeting concluded with vote of thanks given by Mr. Rajeev Kumar Singh to all the members and farmers. The farmers expressed their high level of satisfaction to the organizers.

1.5 Kisan Sangosthi for the Technical Support to the Farmers, Muzaffarpur

The CHAI partnered in organization of Kisan Sangosthi, organized by ASM Foundation, in collaboration with **Jain Irrigation Systems Limited**, Jalgaon, on 14th Nov., 2015, at Kisan Club, Machhahi, Dholi, Muzaffarpur by facilitating the participation of scientists as resource speaker. Dr. H.P. Singh, Former DDG (Horti.), ICAR and Chairman, Confederation of Horticulture Associations of India (CHAI) was the Chief Guest of the function. Smt. Bimala Singh, Managing Trustee, ASM Foundation, Dr. GopalJ iTrivedi, Ex-Vice Chancellor, RAU, Pusa, and Chairman, ASM Foundation, Mr. Surender Pradad Singh, Director Operation, ASM Foundation and Former Addl. Collector, Dumka,were the guest of honour. Dr. Manoj Kumar, Head, CPCRI, Regional Station, Patna, Dr. P.P. Singh, Professor, RAU, Dholi, Dr. S.P. Singh, Professor, RAU,Dholi shared technical experiences for the improvement in productivity of Potato, Tuber crops and pulses, Mr. S.K. Sinha and Manoj Kumar, from the Jain Irrigation Systems Limited, shared their experiences on Micro Irrigation and also on the production of banana. The meeting was participated by over 300 farmers from Muzaffarpur and Samastipur districts. The improved plants of Litchi was distributed to the farmers and the poor of the poor were given blankets.

The Kisan Sangoshti started with brief introduction of the Guest and their welcome by Mr. Ayodhya Prasad, Chairman, Kisan Club. In his introduction he told about the Machhahi Kisan Club established in 2006, and said that the club has received recognitions for its outstanding contribution in empowering the farmers. In this club there are more than 200 Kisan Credit Card holders. The seed village programme implemented by the club has succeed in producing quality seeds. Contribution of individual has also been recognized by the various organization, which will go in long way in improving livelihood of people. Mr. Dinesh, a progressive farmer, spoke about various activities taken up by his organization and said that, the farmers have been immensely benefitted by their association with Lt. Amit Singh Foundation. He described, in details, the benefits of his participation in various conferences organized by ASM Foundation at different locations in the country. He also shared his experiences of knowledge exchanges in Bhubaneshwar and Chitrakoot. Finally he thanked the organizer for choosing his Panchayat for such an important Kisan Sangosthi.

Dr. Manoj Kumar, Head, CPRI Centre, Patna, described in details, the steps for increasing the productivity of potato and said that, it is the time for planting and the farmers can take advantages though interaction in this Sangosthi. He emphasized on use of good quality seeds of recommended varieties by CPRI and mentioned about varieties, recommended for the state of Bihar. He explained in the benefit of planting KufariLalit, Chip Sona-3 and Kufari Jyoti. Potato being heavy feeder, needs efficient management of

nutrients and water for optimum yield and said that use of fertization / drip irrigation have been found to improve the yield by 30-40 percent and also saving in water about 30-60 percent. He also emphasized on timely protection against late blight and other diseases. He also emphasized on appropriate harvesting, sorting, grading and shortage. He suggested for pre-treatment of 3% boric acid before cold storage to enhance shelflife. He urged to the farmer to take up seeds production of potato by obtaining breeder from the CPRI centre. The centre will be happy to provide all the technical guidance in this regards. He also circulated his phone number and address. While concluding, Dr. Manoj Kumar requested the Kisan Club to organize women group for potato processing, which can help them in getting additional income .

Dr. S.P. Singh, Prof. RAU, Dholi described about various spices and aromatic plants which can be successfully grown by farmers and emphasized on the production of turmeric and ginger, which are important in the region, as it provide better income to the farmers and can be grown even in orchards as well as our inter-crops. However, he noted that improved released by the University is not used by many of the farmers. He requested for the use of these varieties, which provide additional yield more than 30-40 percent and has better cucumin content. He described in details management practices, like raised bed planting, appropriate nutrient management, harvesting, grading , curing and polishing. He also said that Kisan Club can think of establishing a Centre for value addition, which can benefit the farmers. Dr. P.P. Singh, while speaking on tuber crops, said that the areas has been known for growing of various tuber crops like sweet potato, yams, yam bean, colocacia, however, elephant foot yam has become very important commercial crops during the decade. It provides high economic returns to the farmers. He described in details about the seed production and practices for production. He said that two crops can be taken in a year through the appropriate management practices. He also described in details about the cropping systems, wherein elephant foot yam and bitter gourd can be grown together. He also described about the various products from the elephant foot yam and proposed to hold two days training for processing, 21-22nd December, 2015.



Mr. M.K. Sinha, Regional Manager, Jain Irrigation Systems Limited, spoke about the benefit of drip irrigation and said that the system has potentiality to increase yield by 40-60 percent and reduce the water requirement by 30-60% depending upon crop and location. He described in details, the fertization and said that a drip irrigation kits can be used by a very small farmers. He also described about solar pump, which is most beneficial for the pumping of water by saving in power. Mr. Manoj Kumar provided details of package of practices for the tissues culture banana and said that yield of about 30-40 tonnes per acre can be obtained. If recommended practices are adopted, more than 1 Lac hac.would be the net return. He described the practices of nutrients management, water management, bunch management, harvesting and marketing of banana. He also answered all the queries of the farmers.

Dr. S.P. Singh, Director, ASM Organization, emphasized on the role of women in National Development and said that women have been playing vital role in training societies and nation. They do not only work at home but also in national development. He also touched upon Agriculture situation and urged

that such Sangosthies should be organized for imparting the knowledge to the farmers. He also spoke about various activities being taken up by the ASM Foundation. He also thanked the farmers for their participation and said that there has been progressive change in economic condition of the farmers, who have adopted new technologies in their field and said that tissue culture plant of banana and technologies for drip irrigation are going to provide better income to the farmers. He thanked the Jain Irrigation System Limited for facilitating this Sangosthi for knowledge enhancement and distribution of banana plants.

Dr. Trivedi Former, Vice Chancellor, thanked the Kisan Club for hosting the Sangosthi. Agriculture is the key to development, which can not be achieved without bringing improvement in production and productivity and enhancing income to the farmers. He emphasized on diversification for higher economic return. He also shared his discussions at various levels including a NITI Ayog, and said that technology should be on driving seat a supported by appropriate investment and policy environment. Dr. Trivedi thanked Mrs. Bimala Singh, for her commitment to farmers for improving their livelihood and said about various activities of the Foundation and requested the farmers for their participation in the conferences and Sangosthi organized by ASM Foundation. He also said that the Global Conference will be organized by the Foundation on 28th-31st May, 2016 at JISL, Jalgaon, a place known for Agriculture revolution through technology-led development. He requested the farmers to participate in this conference.

In concluding remarks, Dr. H.P. Singh, Chief Guest, of the function, thanked all the famers for their participation and organizer for creating a platform for interaction. He said that the condition of the farmers can be uplifted through adoption of technology, which can improve the economic condition of the farmers and their livelihood. He cited a Chinese saying “**if you love someone, don’t give him fish but teach in fishing**”. Therefore, new knowledge and technologies have to be provided to farmers for improving their livelihood. He traced back the various programme of Government including National Horticulture Mission and said that these programmes are aimed to facilitate technology-led development. He further added that maximization in profit can be achieved by value chain management, which includes production management, value addition and marketing. He told about various success story from the different states giving the details, and said that adoption of scientific technology has improved the income of farmers, thus economic condition and quality of life. He stressed on adoption of new technologies by Kisan Club. He expressed his happiness that kisan club is moving forward in adoption of technology and having access to various programme of the Government. Dr. Singh suggested for the establishment of Farmer Producer Company to harness to optimum benefit. Finally, he said that he can be approached any time by the farmers through the Foundation to take maximum advantage.

Distributed blankets to 36 poor of the poor and 50 Litchi plants to the farmers was distributed by Mrs Bimala Singh, Managing trustee, ASM Foundation. The Sangosthi concluded with vote of thanks to guests and the participants.

1.6 KisanSangosthi for Livelihood Options, Sitamadhi

The CHAI partnered in organization of Kisan Sangosthi with an objective of empowering the farmers, with knowledge and skills in agriculture/horticulture, organized by **ASM Foundation**, in collaboration with **Jain Irrigation Systems Limited**, Jalgaon and NRC for Litchi, Muzaffarpur, on 20th December, 2015 by facilitating the participation of scientists, in the village, Dhurwar, Parsauni, District Sitamadhi. Dr. H.P. Singh, Former DDG (Horti.), ICAR and Chairman, Confederation of Horticulture Associations of

India (CHAI) was the Chief Guest of the function. Smt. Bimala Singh, Managing Trustee, ASM Foundation, Mr. Surender Prasad Singh, Director Operation, ASM Foundation and Former Addl. Collector, Dumka, Dr. Vishal Nath, Director, NRC for Litchi, Muzaffarpur, Dr K M Singh, Director Extension, RAU, Pusa, Samastipur and Dr. Manoj Kumar, Head, CPCRI, Regional Station, Patna, were the guest of honour. Mr. Dinesh Kumar, farmer, Dholi, and Mr. Amrit Prasad Varma, from the Jain Irrigation Systems Limited, shared his technical experiences for the improvement in farming. The meeting was participated by over 300 farmers from Muzaffarpur and Sitamadhhi districts. The 150 quality planting material of Litchi was distributed to the farmers and 100 blankets were distributed to poor of the poor especially women.



The Kisansa goshti started with brief introduction of Ramnath Singh, by Ramkripal Mishra of the village Dhurwar. He proposed and requested Mr. Ramnath Singh to chair the meeting. In his introduction, Mr. Ramkripal Mishra, told about agricultural activities and sought solution to the problems being faced by the farmers. Thereafter, programme was conducted by Rajeev Kumar Singh, CEO ASM Foundation. He described, in details, the activities of Lt Amit Singh Memorial Foundation and said that, the Conférences and Sangoshti are organized by ASM Foundation at different locations in the country. Scientists and farmers are recognised by Conferment of various award to encourage them for improving Agriculture. This year, Global Conference on “**Perspective of Future Challenges and ptions in Agriculture**” will be organised at Jalgaon, 28-31 May 2016, to discuss future challenges and options in Agriculture. Mr. Rajeev also requested for the participation of the interested farmer. Mr. Anant Singh and Animan Singh spoke about the foundation.

The Sangoshti was inaugurated by lighting the lamp by chief guest Dr H P Singh and other dignitaries. A floral tribute by all the guests was offered to Lt Amit Singh, an inspiration for all the activities.

Mrs Bimala Singh, Managing Trustee, ASM Foundation, in her welcome address expressed the thanks to Mr Ramnath Singh for hosting the Sangoshti and also thanked the experts and farmers for their participation. She welcomed all the participants and said that the Foundation is committed to economic development of farmers by creating a forum for interaction and sharing of new knowledge. She appreciated the efforts of Amrendra Kumar and Neeta Singh in organising this Sangoshti in this remote village for the benefits of the people. Dr. Manoj Kumar, Head, CPRI Centre, Patna, described in details, the steps for increasing the productivity of potato and said that, it is the time to care for standing crop of potato and the farmers can take advantages though interaction in this Sangoshti. He emphasized on protecting the crop from leaf light and use of good quality seeds of recommended varieties by CPRI for future planting and mentioned about varieties namely Kufari Lalit, Chip Sona-3 and Kufari Jyoti. Needs for efficient management of nutrients and water for optimum yield was emphasised. He further said that the use of fertigation / drip irrigation have been found to improve the yield by 30-40 percent beside saving in water about 30-60 percent. He also emphasized on appropriate harvesting, sorting, grading and storage and suggested for pre-treatment of 3% boric acid before cold storage to enhance shelflife.

Dr. Vishal Nath, Director, NRC for litchi described about various practices in mango and litchi with emphasis on management of flowers and fruits, and said that keeping the bee boxes in orchards improves the yields and provides additional income from honey and other product. He also emphasised on taking up intercrops like turmeric and elephant foot yam for higher income.

Dr. K.M. Singh, Director Extension, RAU, Pusa, briefly described the role played by University in enhancing the agriculture production through new cultivars and technology in the state of Bihar. He also traced the history of Pusa and said that it was started, way back, in 1905, then it was called Imperial Agriculture Research Institute, which was shifted in New Delhi in 1934. The University in the name of first president of India, Honourable Dr. Rajendra Prasad, was started in 1971, with the mandate of education, research and extension education. University has played a very significant role in providing new varieties and technologies to the farmers. Maize revolution in the country is credited to the University. Sugar cane cultivars developed in the university is not only popular in the state of Bihar but outside Bihar also. He urged the farmers to take assistance of the University for improving production and productivity of agriculture crops. He further added that KrishiVigyan Kendra shall be in their service. Which are located in Shivhar District as well as Sitamadhi.

Mr. S.P. Singh, Director, ASM Foundation, in his remarks, stressed upon agricultural situation in the state and urged that such Sangosthies should be organized for imparting the knowledge to the farmers. He also referred to various santogties organised by the foundation, which have benefited the farmers. Then he spoke about the various activities being taken up by the Foundation. He thanked the farmers for their participation and said that there has been progressive change in economic condition of the farmers, who have adopted new technologies in their field and said that drip irrigation is going to provide better income to the farmers. He thanked the Jain Irrigation System Limited for facilitating this Sangosthi for knowledge enhancement.

Mr. Amrit Prasad Varma, Jain Irrigation Systems Limited, spoke about the benefits of drip irrigation and said that the system has potentiality to increase yield by 40-60 percent and reduce the water requirement by 30-60% depending upon crop and location. He described in details, the fertization and said that a drip irrigation kits can be used by a small farmers. He also described about solar pump, which is most beneficial for the pumping of water by saving in power.

In concluding remarks, Dr. H.P. Singh, Chief Guest, of the function, thanked all the famers for their participation and organizers for creating a platform for interaction. He said that the condition of the farmers can be uplifted through adoption of technology, which can improve the economic condition of the farmers and their livelihood. Responding to the some of queries from the farmers Dr. Singh said that new knowledge and technologies have to be provided to farmers for improving their livelihood. He traced back the various programme of Government including National Horticulture Mission and said that these programmes are aimed to facilitate technology-led development. He further added that maximization in profit can be achieved by value chain management, which includes production management, value addition and marketing. He told about various success story from the different states giving the details, and said that adoption of scientific technology has improved the income of farmers, thus economic condition and quality of life. He stressed upon adoption of new technologies and suggested for establishment of Farmers' Producer Company to harness the optimum benefit. During the interaction, emphasized on vermin-compost, honey production, production of seeds, integrated farming and mushroom cultivate was emphasized for improving income of the farmers. He

also emphasized, on adoption of drip irrigation and fertilization and improving the productivity of sugar cane.

Mr. Amrendra Kumar sought the cooperation of farmer for establishing, farmer producer company for production and marketing of vermin-compost, honey and other agricultural produce. The farmers welcomed the proposal and it was decided that a Farmers' Producer Company will be established as soon as possible. Mrs. Neeta Singh thanked all the experts for their efforts in sharing the knowledge and enlightening the farmers in this small village of Bihar. Mr. Ramnath Singh thanked the chief guest, guest of honour, guests and participating farmers. After that Mr. Ramnath Singh thereafter quality plant of litchi and blankets were distributed.



1.7 International Conference on Floriculture and Landscape Gardening – Challenges and Opportunities

Confederation of Horticulture Associations of India (CHAI) in collaboration with Media Today Group organized an International Conference on Floriculture and Landscape Gardening – Challenges and Opportunities, alongwith exhibition Floral Expo, on 27th February, 2016. Dr. Shakil P Ahamad, Joint Secretary and Mission Director, MoAFW, was the chief guest MIDH, Mr. Sudhanshu DGM, APEDA, Mr Pawnesh Kohli, Advisor & CEO, National Centre for Cold Chain Development, were the Guest of Honour, Mr S. Jafar Naqvi, Chief Coordinator, Media Today Group, Dr K.V. Prasad, Director, DFR Pune, Dr. D.R. Singh, Director, NRCO and more than 100 delegates were present. The conference started with the welcome to the Chief Guest and delegates. Mr. Naqvi in his welcome address presented a brief account of activities carried out by Media Today for the promotion of Floriculture. Mr Pawnesh Kohli, Guest of Honour and Mr. Sudhanshu, highlighted the role of floriculture and landscaping with reference to present day environment and also suggested to increase the activities of landscaping for improving the environmental conditions and reducing pollution. Dr Shakil Ahmed, Chief Guest of the function released a compendium “**Commercial Floriculture and Landscape Gardening for Urban and peri Urban Horticulture**”, published by CHAI. During the conference Dr K V Prasad was felicitated for his achievements by the CHAI. The conference had 4 technical sessions i.e. Session-1: Development of floriculture-options and opportunities; Session-2: Emerging opportunities, challenges and options in Development of Floriculture; Session-3: Landscape approaches and techniques in improving urban ecology and life style and Session-4: Interactive and plenary session.

The technical session 1 was chaired by Dr S D Sawant, Co chaired by Dr AD Barad and Mr Narender Patil, Dr Ritu Jain was convenor. The session discussed the development of floriculture and identified the options and opportunities. Dr K V Prasad, Director, DFR, Pune highlighted the current status and future and needs for floriculture development.. He stated that floriculture is a fashion driven industry and therefore, there is a need to develop new varieties as per the needs and emphasized on potted plants, bedding plants, turf grasses and topiaries. He also said about silent contributions of floriculture business and concluded that there is a need to bridge the gaps with respect to export of flower and exchange of planting material. Mr Marcel Steeklenberg from HilverdaKooij, emphasized on breeding and told a simple breeding techniques for developing new carnation varieties for specific traits. Mr Daniel

Kauffman from Danziger, Israel talked about *Gypsophilla, limonium* and other annual flowers and said that demerol for gypsophilla is increasing everyday in International market due to its beautiful white flowers, which are used as fillers. He also described the various uses of gypsophilla other than fillers and narrated about new crops and the varieties of annuals and flowers like Ornithogalum, kalenchoe, verbaena, petunia, osteospermum etc. Technical Session-3, was chaired by Dr D R Singh and Co chaired by Dr S K Gutgutia. Dr Ganesh Kadam was convenor. The session discussed emerging opportunities in floriculture. Dr D R Singh talked about the status of orchids in floriculture industry in India and International market. He also reported the various types of orchids grown in the North Eastern states and gave an account of scope in area exploration under orchids and Anthuriums. Mr Rownd Gutgutia showed the complete production technology of Anthuriums under Bangalore conditions and emphasized on the proper packaging of the anthuriums to fetch premium price in the market. Dr Santosh Taware narrated about new flower crops especially potted plants suitable for diversification to increase the profits of the farmers. Dr S L Chawla talked on different paradigms of floriculture like production of high value crops under protected cultivation and emphasized on the scope of turf grasses in landscape industry and the need to develop the production technologies for better landscapes, golf courses, playgrounds, commercial complex.

After detailed discussion the following recommendations emerged

1. Considering that rapid urbanization is taking place and natural resources are declining, necessitate proper planning to be integrate and maintain the greenery in home and public gardens to overcome the complexity. Floriculture assumes much greater significance to reduce the heat load and gaseous pollution. Various kinds of gardens i.e. landscape gardening, roof top gardening, interior landscapes, vertical gardens not only reduce the heat and cool the environment but various plants have capacity to sequester the carbon and absorb gases to keep a clean environment. Therefore, arises the need for sustainable development in urban and peri-urban horticulture.
2. Urban and Peri-Urban Horticulture is an activity of greening the cities and towns, complementing the needs of food and nutrition, utilizing city waste and servicing the environment through effective and sustainable use of natural resources. This needs technological inputs, investment, policy and bringing the entire stakeholders together to work in mission mode. Nevertheless, UPH will prove to be a vehicle in adoption to climate change and create better environment in urban and Peri-urban area for healthy living. In this direction it is very important to create awareness, to work together to address the vital issue of rapid urbanization and its complexity, in terms of food, nutrition and environment.
3. Air quality can be improved by adding plants and maintains the needed green space in indoor and outdoor landscape gardening. Wherever space in urban areas is limited, vertical gardens with diversified plants integrated with landscape gardening should be adopted. Trees and other ornamental plants are crucial to the sequestration of carbon from atmosphere and play an important role in reducing carbon footprint. Therefore, sustainable development of urban horticulture is essential to service the environment.
5. Research should be done to identify region wise crops of floriculture. Accordingly package of practices may be developed and propagated amongst the growers. The safe practices by farmers and consumers in producing different crops in urban and peri-urban areas should be ensured. This is also a technological challenges and must be addressed through integrated research approach involving all the stakeholders.

6. Urban green spaces are characterised by growing plants having environmental benefits which ultimately purify the urban environment. Therefore a proper choice of plants and trees could significantly contribute to the development of the city which depends on human preferences, sequence of occupancy and the available plant materials. Mixed plants shall improve the diversity and appropriately serve the environment. Therefore, choice of the plant should be based on sequestration capacity and adaptability of tree to given environment, Therefore, inventory of plant species in different environment, their performance both of exotic and indigenous should be created which would provide guidance in urban planning.
7. Attention may be given for available technologies on input supply (seeds, seedlings, manures, pesticides *etc.*) to urban and peri-urban agriculture as availability of small quantities of inputs is still far from satisfactory. Emphasis on suitable small scale protected cultivation structures for roof top gardening as well peri urban production of fruits, vegetables and flowers need to be developed. Terrace gardening usually refer to the area in the immediate vicinity of a building. The terrace forms a link between the house and the rest of the outdoor living space and must, therefore, be designed in harmony with the plan of the house.
8. Roof garden is one of popular alternatives in urban and peri-urban areas, because of the limited available space on the grounds of a house. Particularly, in the big cities and towns, the only space left for garden enthusiasts is the roof of the house and the balcony. To ensure the success of roof garden, technical and developmental support should be provided. Currently, a green space of 20 m² park as minimum standard has been suggested. There are city-specific specifications used to set standards. No dwelling should be more than 500 metres from a green area of at least 6,000 m². Green spaces in urban systems should essentially be developed as networks. There is no definite standard for green space in city based on scientific data. Therefore, standard for green space in the cities and tree coverage need to be developed.
9. Aeroponics is a system of growing plants wherein roots are continuously or discontinuously kept in an environment saturated with fine drops (a mist or aerosol) of nutrient solution. This technique has proven to be commercially successful for propagation, seed germination, seed potato production, tomato production, leaf crops, and micro-greens, since its commercialization in 1983, Aeroponics is an alternative to water intensive hydroponic systems worldwide. Distinct advantage of aeroponics over hydroponics is that any species of plants can be grown in a true aeroponics system because the micro environment of an aeroponic can be finely controlled. Aeroponically grown plants need less water and nutrients.
10. The changes foreseen in Indian horticulture in next five years may be focus with hydroponics. Hydroponics is fairly a novel farming technology for Indian farmers. It is a flexible technology, apt for both developing countries, like India, and high-tech space stations. Hydroponic technology can efficiently generate crops in desert, infertile lands, in mountainous regions, on city rooftops and concrete schoolyards. In highly populated areas, where skyrocketing land prices have evicted traditional agriculture, hydroponics can provide locally grown high-value crops such as fresh salad greens, herbs and cut flowers. This technique is also ideal for growing wide range of plants especially cut flowers, tomatoes, cucumbers, and peppers and leafy vegetables. The use of hydroponics in the future will have social and economical advantages. A major advantage to using hydroponics is the ability to bring employment possibilities to underprivileged regions on the nation, especially the areas where there is little to no employment opportunities.

11. Flowers and green plants in the interior of homes and offices have significant influence on indoor air quality, human psyche and emotions, which directly induces happiness and good health and indirectly influence positive outlook, work culture and performance. Potential of house plants to clean indoor air is widely publicized in media but research on role of plants in indoor air quality improvement is inconclusive. Therefore, field studies under real life situations are needed for concrete evidence.
12. A noticeable progress has been made in commercialization of cymbidium orchids in north eastern states of the country. North eastern states are blessed with climatic conditions suitable for cultivation of beautiful, highly profitable orchids -CYMBIDIUM. The small and marginal farmers of this region have very low risk bearing capacity. Hence, the active involvement of government agencies like NRC for Orchids (NRCO), National Horticulture Board (NHB), Agriculture and Processed Food Products Export Development Authority (APEDA) etc. is required to support the farmers technological, financial, infrastructural and logistical aspects in farming of cymbidium in the region.

1.8 National Conference on Technologies Empowering India Agriculture

Confederation of horticulture Associations of India partnered a conference organized by Geospatial Media and communications at India Expo Centre and Mart, Greater Noida with a theme technologies empowering India agriculture, on 2-3 March, 2016. The conference had focus on agriculture and rural development science precision agriculture, digital farming, ICT based agriculture, mobile based agriculture and climate smart Agriculture. The technical sessions were organized in 6 sessions, and 20 experts in the field gave a presentation in theme area followed by a panel discussion and resolution for recommendations. The Chairman CHAI, Dr. H.P. Singh chaired a session and spoke on the occasion about climate smart precision agriculture emphasizing the need for precision agriculture. DrSikka spoke about soil health management. Talks were also delivered on ICT base extension and linking the farmers with market. The conference succeeded in catalyzing, the participants for prescient agriculture..

1.9 Round Table Discussion on Food Security

The Chairman, CHAI facilitated a round table discussion on addressing the challenges of food security on 31st March, 2016 on behalf of ASSOCHAM. The round table meeting was inaugurated by Mr. Ramesh Chandra, Advisor, NitiAyog, a key note lecture was delivered by Dr. R.B. Singh, Chancellor, Dr. H.P. Singh in his introductory remarks explained briefly about the **Food Security** and emphasized on nutritious and explained in details how it can be done. During the meeting Dr. R.B. Singh explained the International status of food security and talked in detail n international perspective. It was also brought out that, although FAO reduced the norms of Food Security from 2400 kilo Calories and 2100 kilo calories as minimum dietary energy norm for urban and rural areas, they have not included other factors like – consumption of proteins, mineral and other micro-nutrients. While talking the Ramesh Chandra said that NITI Ayog is taking utmost care to redefine the food and nutritional security. He also informed about various measures taken to ensured food security including his working on various policy including land lease rules. After detailed discussion it emerged that various measures including policy, investment and technologies are essential to address the food and nutritional security.





2. Participation in International/Conferences/Congress and delivery of Keynote lectures

2.1 International Agri-tech Exhibition, Israel

Dr. H.P. Singh visited **Agri-tech Israel** and also the Naandaan Jains factory from 26-30th April, 2016, He participated in exhibition and addressed the Indo-Israel Joint meeting and spoke about the need for efficient utilization of water to increase the productivity. He also said that there is much scope for Indo-Israel collaboration in the various field. CII representatives made a point to have collaborations,



2.2 5th National Conference on Organic World Advantage in India

The Chairman supported the 5th National Conference on **Organic World advantage** in India organized by ASSOCHAM in collaboration with Govt. of India, APEDA with the support of Jain Irrigation Systems Limited on 16th September, 2015. He chaired the session and delivered a talk on the need for organic produce for better health of the people. He briefly explained the efforts made for promotion of organic farming in India and development of various standards on which he worked, when he was horticulture commissioner and also explained about a report submitted to the Govt. Of India, and said that the promotion of organic farming needs integration



with eco-system. He also explained that organic farming can be adopted in selected regions where less of fertilizer has been used, especially NE and in crops where less problem of pest and diseases are observed.

2.3 Food Strategy Summit-2015

The CHAI got associated with Food Strategy Summit organized by the Economic Time in association with Rabobank, attended by the CEO of leading corporates in Agri-Business, on 29th October, 2015. The Summit took stock of the demand patter, and its impact on the food and agriculture value chain. The consumer lexicon

today includes hitherto unfamiliar categories such as organic, whole gain, food safety, etc, which impacts the purchase drivers. These, changing consumer demands incorporate the rising demand for more protein; the ease of availability, a focus on food hygiene and safety; food quality; a wider range of foods; a focus on food as a source of nutrition and health; etc, and all of these demands have an impact of the entire value chain in the food and agriculture. On the other hand, the food and agriculture chain also has to contend with the challenging of the farming sector itself- incomes that are unable to keep pace with the expenses year on year; the vagaries of the weather; the price fluctuation of the commodities; which in turn sense to determine the sowing of crops, the need for better managed supply chains, increasing energy and irrigation needs, etc. The new Indian consumer has a higher income, has less time to prepare food the traditional way, is globally aware and has a trade palate that is international and all this in turn has a clear impact on the food consumption pattern and the food and agricultural value chain. The change in the consumer is resulting not merely in a simplistic demand for more food. Rather, it is impacting the nature of the demand. The consumer wants more protein, wants



a wider range of fruits and vegetables, from a traditional “make-it-myself” model, the consumer is moving towards ready-made food options and also for convenience in the cooking process. This necessitates a better food processing sector and also innovations in packaging, for e.g. shredded cheeses in ziplock bags. In terms of dietary preferences and requirements too, there is change taking places. The increasing awareness of and the rising incidence of diseases such as diabetes, obesity and cardio-vascular ailments has also led to a demand for healthy food and foods that can deliver taste without adding to health risks.



2.4 Leadership Summit

Dr H P Singh, chairman participated in agriculture today submit organized by **agriculture leadership submit 2015** organized by AgricultureToday, The meeting was inaugurated by honourable Minister of Urban Development shreeVankaiNaidu. Dr Singh participated as one of panelist in the submit and expressed his opinion for improving the income of the farmers through the adoption of horticulture. In the evening he participated in award function and received a leadership award of JISL on their behalf. He also spoken on the occasion giving a brief about Jain Irrigation Systems Ltd. and said that the company is committed to the farmers welfare by increasing their income by providing better inputs like, micro irrigation, solar pump, tissue culture plants and also technical know how.



2.5 Visit to DCR, Puttur and CPCRI, Kasargod

Dr HPS Chairman visited NRC, seed spices on 19th January, 2016 and delivered a foundation day lecture. He visited different fields and explained about the various activities. He appreciated the efforts of the Director Dr Balraj Singh in adoption of new technology in seed spices .

2.6 The chairman visited and Dubai in January, 2016 participated in the meeting and shared knowledge in horticulture. He also visited Miracle garden, which is one of the best in the world, as it demonstrates newer technology for adoption in cities for environmental services.

3. AGCM Meetings

3.1 The 4th Annual General Council Meeting of Confederation of Horticulture of India

To review the technical and financial progress the Board of Directors meets as per the needs, at least of times in a year. General Council meets once in a year on 29th May. 4th Annual General Council Meeting of CHAI was held at 7.00 P.M. on 29th May, 2015 in the main conference Hall of the MGCGV, Chittrakoot, to review the progress and develop future strategic plan of activities to full-fill the objectives stipulated for



the furtherance of Horticulture / Agriculture. The meeting started with the introductory remarks of the Chairman followed by items on the Agenda and suggestions from the various. The progress made and financial position of the CHAI was well appreciated and activities were highly commendable and placed on the record. Thereafter, the fellows of chair was conferred for the year 2015 to all the selected candidates. JISL Fellowship, Best dissertation Award and Best Paper award were also conferred to the selected individuals. It was also decided that during the year international conferences and national conference will besupported. Support provided to scientists for their participation in international horticulture congress was also commended. The meeting concluded with a note of appreciation for the Chairman authorizing him to take the activities and decisions as he deems it fit in the best interest of the CHAI.. The meeting also nominated Dr. Tyagi, Head, Genetic Conservation Division, NBPGR as General Secretary to assist the Chairman. Dr. R.S. Paroda, Former Secretary, DARE and DG ICAR, Chairman, CHAI has accepted to be the Chief Patron.

4. Meetings of the Board of Directors & Other Meetings

4.1 Board Meetings

During the year 4 meetings of the Board of the directors were held which approved the activities, balance sheets, future plans and also the decisions taken by the Chairman in the best interest of CHAI. Since Dr. H P Singh is the independent Director in the Board of Director of JISL, he attended all the meetings, Being Executive member of ASSOCHAM he attended the meetings. He also attended meetings in ICAR, SAU and meetings of the associations. Dr Singh also chaired KisanGosthiorganised in Dabhanga District of Bihar.



4.2 Other Meetings

During the year the chairman participated in many meeting organized my CII, as member of Executive Council on Agriculture, meetings of NAAS, the meeting Of ASRB and also the meetings in the universities convened with Horticulture/agriculture.

5. Conferment of Awards and Fellowship

To recognize the contribution of scientists and other stakeholders in the research and development of horticulture/agriculture in the country and also abroad, the Confederation has instituted various awards to recognize the services of individuals, which includes “**Life Time Achievement Award and Honorary Fellowships**” to recognize the contribution for excellence in horticulture/agriculture, which made difference and brought changes. “**PadamBhushan Dr. R.S. Paroda Award for Excellence**” was instituted to recognize achievements in research and academics. **Padma Shri Dr. B.H. Jain Award** for performance, this award is instituted to recognize the contribution in transfer and diffusion of knowledge technology and also for technology-led development. The distinguished members with the commitment to the furtherance of research and development are conferred **Fellowship of CHAI**. CHAI also proposes to institute overseas fellowship for training and participation in conference for meritorious members. CHAI is in discussion with many donors to institute other awards for the benefits of the member.

Dr. H P Singh, Chairman, CHAI, mentioned about various awards of the Confederation and its activities. Thereafter, awards and fellowships were conferred. **Life Time Achievement Award**, which recognizes the leadership in horticulture, was conferred on Dr. A.B. Molina, BAPNET, Bioversity International, Philippines, **Dr. R S Paroda Award of excellence- 2014**, which is given for outstanding contribution to research in horticulture was conferred on Dr. S.K. Malhotra, Horticulture Commissioner, Govt. of India, **Dr. B H Jain award of CHAI**, which recognizes the services in teaching and dissemination of knowledge for Excellence in dissemination of knowledge was conferred on Dr. M.R. Hegde, Principal Scientist, IIHR, Bangalore. **Shri Ramnandan Babu Award**, which recognizes the contribution and excellence in farming was conferred on Shri Sudhansu Kumar, a progressive farmer, Nayanagar, Samastipur, Bihar. **H. S. Mehta Award** recognizes the outstanding contributions of young scientists. Shri S. S. Mehta gave a brief about the Mehta Foundation and the award. H.S. Mehta award was conferred on **Dr. P.C. Tripathi**, Principal Scientist, IIHR, Bangalore for his outstanding contribution to promotion of horticulture research and development. The Chief Guest, Dr. Gurubachan Singh conferred the award in absentia, which was received by Dr. M.R. Hegde on the behalf of Dr. Tripathi. JISL fellowship for visit abroad for presentation of paper, was given during AGCM. Best thesis award, and best paper award was also given during the AGCM on 28th May. Selected Fellows were also conferred the Fellowship, which consisted of Plaque of Honour, Citation and a certificate.

6. Publications

6.1 International Journal of Innovative Horticulture

Considering the needs for dissemination of science based knowledge among scientists for the furtherance of horticulture science and request of members from across the country and abroad, it was felt essential to bring out a journal. Accordingly, an **International Journal of Innovative Horticulture (IJIH)** was announced, which has overwhelming response. Peer reviewers are of national and international repute. The first issue of the journal was launched by His Excellency, Governor of Karnataka at Bangalore. The journal has an international look and shall consider original papers on multi-disciplinary aspects. The journal is published bi-annually which will be converted into quarterly publication in the years to come. The types of papers include Research, Reviews, Case studies, New cultivars and new technologies, Commentaries and opinions, Policy issues, Abstract of Ph.D. thesis, Book Review, Features, Colloquia and Workshops. Three volumes of the journal up to 2014 have been published and is being submitted to National Academy of Agricultural Sciences to get NAAS rating.

6.2 Year book of CHAI-2015

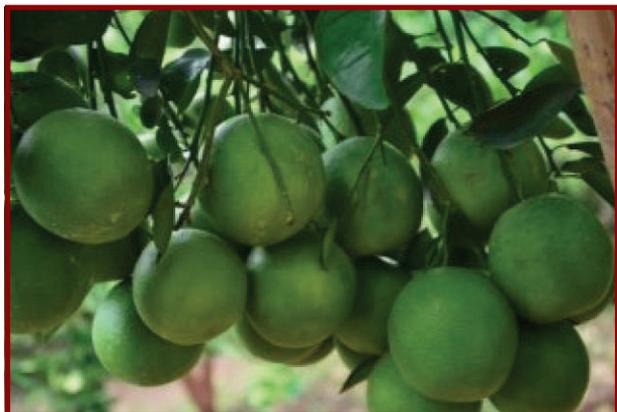
The year book of CHAI, which contains, a brief bio-data, mailing address of the fellows and awardees and also information about the CHAI and guidelines for publication of an article in IJH and nomination of awards of CHAI was published and circulated. The year book is also uploaded on the site of CHAI [www: confedhorti.org](http://www.confedhorti.org) . The annual report was also printed and distributed.

6.3 Proceeding

The Chairman, CHAI, finalized and helped in the publication of the proceedings of National conference held at MGCGV, Chitradoot. The proceedings have been printed and distributed. The proceeding of three conferences, held at Madhya Pradesh, Pune, and Jalgaon has also been finalized and are under processing for printing.

7. Advisory

Dr. H.P. Singh, Chairman, CHA visited to the farmers' fields in Patna, Munger, Jalgaon, to study the situation and advised the farmers for adoption of high tech production systems, The Chairman also visited the farmers field in Maharashtra in the month of August, 2015, He continued to advise the organisations on policy issues.



8. Balance Sheet of CHAI

PART I — BALANCE SHEET CONFEDERATION OF HORTICULTURE ASSOCIATIONS OF INDIA CIN No. U02103DL2016NPL211511 Balance Sheet as at 31st March, 2015			
Particulars	Note No.	Figures as at the end of current reporting period	Figures as at the end of previous reporting period
1	2	3	4
I. EQUITY AND LIABILITIES			
(1) Shareholders' funds			
(a) Share capital	1	500,000.00	500,000.00
(b) Reserves and surplus	2	8,092,183.86	5,052,011.57
(c) Money received against share warrants			
(2) Share application money pending allotment		-	-
(3) Non-current liabilities			
(a) Long-term borrowings		-	-
(b) Deferred tax liabilities (Net)	3	-	9,028.78
(c) Other Long term liabilities		-	-
(d) Long term provisions		-	-
(4) Current liabilities			
(a) Short-term borrowings		-	-
(b) Trade payables		-	-
(c) Other current liabilities	4	17,100.00	16,854.00
(d) Short-term provisions		-	-
TOTAL		6,609,264.00	6,577,894.36
II. ASSETS			
Non-current assets			
(1) (a) Fixed assets			
(i) Tangible assets	5	55,317.58	114,881.35
(ii) Intangible assets		-	-
(iii) Capital work in progress		-	-
(iv) Intangible assets under development		-	-
(b) Non-current investments	6	5,500,000.00	4,500,000.00
(c) Deferred tax assets (net)	3	21,543.19	-
(d) Long-term loans and advances		-	-
(e) Other non-current assets	7	31,697.00	31,697.00
(2) Current assets			
(a) Current investments		-	-
(b) Inventories		-	-
(c) Trade receivables		-	-
(d) Cash and cash equivalents	8	883,564.50	792,926.00
(e) Short-term loans and advances	9	107,141.00	108,390.00
(f) Other current assets	10	15,000.00	30,000.00
TOTAL		6,609,264.00	6,577,894.36
See accompanying notes to the Financial Statements.			
Notes		11	
In terms of our report attached.			
For Kauslial Kumar & Co. Chartered Accountants		For and on behalf of the Board Of Directors	
ANSH GUPTA M.No. 520151 Partner	ILAKSHI CHAND PRASAD SINGH (DIN NO. 06387116) DIRECTOR	AMITA CHANDRA (DIN NO. 02521157) DIRECTOR	
Place : NEW DELHI Date: 18/08/2015			

ANNUAL REPORT 2015-16

CONFEDERATION OF HORTICULTURE ASSOCIATION OF INDIA 249,KARGIL COLONY, DWARKA, DELHI-110075			
BALANCE SHEET FOR THE YEAR ENDED 31-03-2014			
Liabilities	Amount(₹)	Assets	Amount(₹)
Share Holder's Fund:-		Non current Asset	
Share Capital	5,00,000.00	Fixed Asset	1,14,881.35
Reserve & Surplus	50,52,011.57	Non current Investment	45,00,000.00
		other non current Assets	31,697.00
			46,46,578.35
Non Current Liabilities:-		Current Assets:-	
Deferred tax liabilities (net)	9,028.78	Loans & Advances	1,08,390.00
		Cash in Hand	6,61,623.00
Current Liabilities:-		Cash at Bank	1,31,303.00
Other current liabilities	16,854.00	Other current Assets	30,000.00
			9,31,316.00
TOTAL	55,77,894.35	TOTAL	55,77,894.35

CONFEDERATION OF HORTICULTURE ASSOCIATION OF INDIA 249,KARGIL COLONY, DWARKA, DELHI-110075			
BALANCE SHEET FOR THE YEAR ENDED 31-03-2013			
Liabilities	Amount(₹)	Assets	Amount(₹)
Share Holder's Fund:-		Non current Asset	
Share Capital	5,00,000.00	Fixed Asset	1,28,131.00
Reserve & Surplus	39,88,941.00	Non current Investment	35,00,000.00
		other non current Assets	62,028.00
			36,90,159.00
Current Liabilities:-		Current Assets:-	
Short Term Borrowings	91,000.00	Loans & Advances	1,89,155.00
Other current liabilities	16,854.00	Cash in Hand	5,16,100.00
		Cash at Bank	1,56,381.00
		Other current Assets	45,000.00
			9,06,636.00
TOTAL	45,96,795.00	TOTAL	45,96,795.00

FOR SPMR & ASSOCIATES
CHARTERED ACCOUNTANTS

FOR CONFEDERATION OF HORTICULTURE ASSOCIATION OF INDIA

Santosh Kumar Prasad
(Partner)

DIRECTOR

Date :-
Place :-

Guidelines of Awards and Fellowships

9. CHAI Awards and Fellowships

The Confederation of Horticulture Associations of India (CHAI), has instituted various awards and fellowships. **Honoured Fellow** is conferred to distinguished personalities for the leadership, Life Time Achievement Awards and Honorary Fellowships, to recognize the scientists for their contribution and excellence in agricultural sciences, specially horticulture, including biotechnology and environmental sciences. In addition, it was also decided to institute Padma Bhusan Dr. R.S.Paroda Award for Excellence in research. Subsequently, Padamashri Dr. B.H. Jain Award for excellence in dissemination of technology has also been instituted. This award will recognize the outstanding contribution of extension workers and teachers for their contribution in dissemination of knowledge. RamnandanBabu Award for innovative farmers has been instituted to recognize the innovation of farmers. To support the knowledge provided for participation in conference abroad JISL Fellowship has been instituted. These awards/ fellowships will be conferred on scientists, entrepreneurs/ innovative farmers based on the merit, as adjudged by high powered committee, once in a year, on the suitable occasion of national or international conference organized or supported by the CHAI or foundation day. The guidelines framed for nomination, selection and conferment of awards and fellowship, as finalized by Board/Directors/ Chairman, which are liable to be amended, from time to time, for CHAI Awards and Fellowships are:

9.1 Honoured Fellow of CHAI

The distinguished personalities, who have provided leadership of par excellence for the development of Indian Agriculture are recognised by conferring **Honoured Fellow Of CHAI**. The awardees should have contribution to the furtherance of horticulture/ agriculture and must have peer recognition at nationally and internationally, in improving the infrastructure, policy and programs of research, research and development impacting Indian Agriculture. Nominating in prescribed format will needed for consideration (Annexure I).

- **Eligibility for nomination:** He or she nominated for Honoured Fellow of CHAI should have attained 55 years of age, latest by the last date for nomination, and should be known for his/her contributions nationally and internationally. The period for assessment shall be based on the contributions made in their career up to the year of nomination. The award shall consist of a certificate, citation and plaque of honor.
- **Who can nominate?** The nomination can be made by distinguished scientist working in horticulture/agriculture research and is the Fellow of the CHAI. Selection will be made based on the nominations along with the relevant information with evidence of outstanding contributions of each nominee. Self nominations are not acceptable. The search committee constituted by the Founder and Chairman, CHAI shall submit recommendations for the approval of the Board of Directors/Founder Chairman. This shall be a consensus decision, which will be final.

9.2 Life Time Achievement Award

A Life Time Achievement Awards, once in a year, shall be given to selected scientists or research managers for their distinguished services for the cause of horticulture/agriculture research, education and technology dissemination, which has impacted the development in the country. The awardees should have contribution to the furtherance of horticulture/ agriculture and must have peer recognition

at nationally and internationally, as supported by the publications, products, processes, cultivars and patents etc. The nomination with bio-data in performa, as given Annexure I will be needed by the search committee.

- **Eligibility for nomination:** He or she nominated for Life Time Achievement Award should have attained 60 years of age, latest by the last date for nomination, and should be known for his/her contributions nationally or internationally. The period for assessment shall be based on the contributions made in life, up to the year of nomination. The award shall consist of a certificate, citation and plaque of honor, and he or she shall be the honorary fellow of confederation.
- **Who can nominate?** The nomination can be made by any scientist working in horticulture research with a distinguished career, and is member of the CHAI. Selection will be made based on the nominations along with the relevant information with evidence of outstanding contributions of each nominee. The nomination can also be sent by Deputy Director Generals, ICAR, Vice Chancellors, ADGs, Directors of Research institutes/ SAU/CAU and Presidents and Secretaries of member societies of the CHAI, in the prescribed format. Self nominations are not acceptable. The search committee constituted by the Founder and Chairman, CHAI shall submit recommendations for the approval of Founder Chairman. This shall be a consensus decision of the committee, which shall be final.

9.3 DR.R.S Paroda Award for Excellence

This award has been instituted in the name of Padma Bhushan, Dr. R.S. Paroda, by the confederation, in recognition to his contributions in national and international development of agriculture, and his passion for the agricultural research, education, transfer of technology and building the infrastructure for its support. Dr. Paroda is not only adorned with various awards but his commitment is a testimony to create confidence among scientists, who are converting research into knowledge for horticulture/ agriculture and providing policy guidelines. Having occupied national and international position, the contribution of Dr. R.S. Paroda as Director General, ICAR is memorable to all the scientists in the country. He still continues serving farmer's community as the Chairman, TAAS and also Farmers' Commission, Government of Haryana. Therefore, the award is instituted to recognize the scientific excellence in agriculture, specially horticulture, biotechnology and environmental sciences, Dr. R. S. Paroda award shall be given once in a year, which will consist of a citation, a plaque of honor and a commitment to support foreign travel assistance to actual expenditure or maximum of Rupees fifty thousand, whichever is least, for oral presentation of the paper selected in international conference. The validity of the financial grant will be for a period of 2 years from the date of award announcement. This assistance is nontransferable.

1. **Eligibility for nomination:** The scientist not exceeding age of 55 years shall be eligible for nomination on or before the last date of application. The contribution of scientists should be known internationally or nationally in development of cultivars /technology/product/process/ patent developed and duly supported by evidence of publications.
2. **Who can nominate?** Selection will be made based on the nominations along with the relevant information (Annexure I) on outstanding contributions of each nominee. The persons/institutions eligible for making nominations for the above awards would be the DDGs, ADGs of ICAR, Vice Chancellor's, Heads of CGIAR centers, Directors/Deans/Joint Directors of ICAR and SAU's/CAU and

Presidents of all member societies of the CHAI and fellow of CHAI or person of repute, in the prescribed format. Self nominations are not acceptable. The judging committee constituted by the Founder and Chairman, CHAI shall submit recommendations for approval of the Board of Directors/Founder and Chairman.

9.4 DR. B.H Jain Award for Excellence in Dissemination of Knowledge

This award has been instituted in the Name of Padma ShriDr B.H Jain, by the Confederation, in recognition to his contributions in national and international development of agriculture, his passion for knowledge based agriculture, and empowerment of youth and farmers with new technology to make the farming profitable. Dr. Jain is not only adorned with various awards but is a testimony to create confidence among farmers, who are converting adopting the knowledge for improving farm practices. Having national and International recognitions, the contribution of Dr. Jain as enterprising leader for converting unproductive land into a green is un-parallel. He continues serve-farming communities. Therefore, the award is instituted to recognize the extension worker and teacher in agriculture. This shall be given once in a year, and shall consist of a citation, a plaque of honor and certificate. He or she conferred with award shall be eligible to seek financial assistance .The validity of the award for seeking financial assistance will be for the period of two years, from the date of announcement of selection.

1. **Eligibility for nomination:** The scientist not exceeding age of 55 years shall be eligible for nomination on or before the last date of application. The contribution of scientists should be known internationally or nationally in development of cultivars /technology/product/ process/ patent developed and duly supported by evidence of publications.
2. **Who can nominate?** Selection will be made based on the nominations along with the relevant information (Annexure I) on outstanding contributions of each nominee. The persons/institutions eligible for making nominations for the above awards would be the DDGs, ADGs of ICAR, Vice Chancellor's, Heads of CGIAR centers, Directors/Deans/Joint Directors of ICAR and SAU's/CAU and Presidents of all member societies of the CHAI and fellow of CHAI or person of repute, in the prescribed format. Self-nominations are not acceptable. The judging committee constituted by the Founder and Chairman, CHAI shall submit recommendations for approval of the Board of Directors/Founder and Chairman.

9.5 Ramnandan Babu Award for Innovation in Farming

This award recognizes an innovative skills of a farmer and is named after, Sri Ramnandan Babu Mahmada, Pusa, Samastipur, Bihar who supported his family with very small holding through his innovation. This award is instituted on his name. The award will recognize the innovations in farming for enhanced productivity of land and water generating highest income per unit of land. This award will given once in a year and shall consist of citation, a plaque of honour and certificate. The he or she conferred with award shall be eligible to seek financial assistance for upgradation of Knowledge. The validity of award for seeking financial assistance will be for the period of two years from the date of announce of the selection.

3. **Eligibility for nomination:** The farmer not exceeding the age of 55 years shall be eligible for nomination on or before the last date of application. The contribution of farmer should be known internationally or nationally for his innovations in farming as evident from peer recognition awards and documents

4. **Who can nominate?** Selection will be made based on the nominations along with the relevant information (Annexure I) on outstanding contributions of each nominee. The persons/institutions eligible for making nominations for the above awards would be the DDGs, ADGs of ICAR, Vice Chancellor's, Heads of CGIAR centers, Directors/Deans/Joint Directors of ICAR and SAU's/CAU and Presidents of all member societies of the CHAI and fellow of CHAI or person of repute, in the prescribed format. Self-nominations are not acceptable. The judging committee constituted by the Founder and Chairman, CHAI shall submit recommendations for approval of the Board of Directors/Founder and Chairman.

9.6 JISL Fellowship

This is a sponsored fellowship to promote young scientists, entrepreneurs, farmers-the knowledge provider to participate in international conference for the presentation of new innovations. All the members are eligible. One fellowship in a year will be given based on merit.

- **Eligibility for nomination:** The scientist not exceeding age of 55 years shall be eligible for nomination on or before the last date of application. The contribution of scientists should be known internationally or nationally in development of cultivars /technology/product/ process/ patent developed and duly supported by evidence of publications.
- **Who can nominate?** Selection will be made based on the nominations along with the relevant information (Annexure I) on outstanding contributions of each nominee. The persons/institutions eligible for making nominations for the above awards would be the DDGs, ADGs of ICAR, Vice Chancellor's, Heads of CGIAR centers, Directors/Deans/Joint Directors of ICAR and SAU's/CAU and Presidents of all member societies of the CHAI and fellow of CHAI or person of repute, in the prescribed format. Self-nominations are not acceptable. The judging committee constituted by the Founder and Chairman, CHAI shall submit recommendations for approval of the Board of Directors/Founder and Chairman.

9.7 Honorary Fellow of CHAI

One of the objectives of Confederation of Horticulture Associations of India (CHAI) is to recognize the excellence in scientific research. Thus, from among the member Fellows are identified with academic excellence in different areas of horticulture/agriculture, adjudged on the basis of outstanding achievements and sustained significant contributions in horticulture for honorary fellowship. The nomination can be received from any scientist working in research and development of horticulture, preferably member of CHAI. A maximum of five Fellows will be inducted in a year. The recommendations of search committee shall be put for approval to The Founder Chairman/Board of Director. The decision of the Founder and Chairman shall be final. The recipient of Life Time Achievement Award shall become honorary Fellow of CHAI.

9.8 Fellowship of CHAI

Certificate of membership or admission to Confederation of Horticulture Associations of India (CHAI) shall be in the form of Fellow of CHAI. There shall be Corporate Fellowship, Association Fellowship, Institutional Fellowship. NPO Fellow and Individual Fellowship. Two members each have to nominate for membership and right to admission to the CHAI is reserved presently with committee and Board of Directors. This fellowship recognizes the commitment of all the individuals, corporate sector,

Institutions, NPO and associations for the furtherance horticulture/agriculture research and development. Decision of the Board of Directors/Chairman shall be final. No representation shall be entertained by the CHAI.

9.9 Best Dissertation Award

The Confederation of Horticulture Associations of India (CHAI) wishes to recognize the research of the student at Ph.D. level by conferring best dissertation award based on relevance of topic of research, quality of research output and outcome and its application in the field of science. This award will be given once in two years. The awardees' will receive the certificate, plaque of honour and free subscription of Journal – International Journal of Innovative Horticulture for the year.

- **Eligibility for nomination:** The student who has submitted the thesis and completed the viva voce. The student who has been awarded Ph.D. in last proceeding Year are also eligible.
- **How to apply?** The interested eligible candidates can send their application with full details containing name and address title of thesis summary along with a copy of dissertation for consideration by Confederation of Horticulture Associations of India (CHAI).

9.10 CHAI Best Paper Award

This award is instituted to encourage publication of high quality in International journal of Innovative Horticulture. The committee examine the paper published in preceding year of award the published original article and recommend for Conferment of award. The recommendations of s committee shall be put for approval to Board of Director /The Founder Chairman/Board of Director. The decision of the Founder and Chairman shall be final. The recipient of award shall be honoured with certificate and Medal. The awardee will also receive two issues of the Journal in which Paper is published.