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CONFEDERATION OF HORTICULTURE
ASSOCIATIONS OF INDIA

Annual Report 2021-22

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CHAI

Annual Report

2021-22



CONFEDERATION OF HORTICULTURE ASSOCIATIONS OF INDIA

(An ISO 9001:2015 Certified Organisation)

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From the Desk of the Founder and Chairman

Dr. H.P. Singh

Chairman, CHAI

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The year 2020 and 2021 were highly challenging, as whole world was challenged to save the life of people and contain the economic losses. The pandemic made us to think differently for our food, life style and working environment. Work from home, digital dialogues and conferences have become a new normal. In this scenario the CHAI participated in many webinar but the physical conference, which was to be organised in the month of May, 2021 was postponed. The **Confederation of Horticulture Associations of India (CHAI)**, established in the year 2010, is committed to the furtherance of Horticultural/Agricultural development through knowledge creation, dissemination and implementation of the programme.

The **CHAI** took an initiative to organize **Knowledge Sharing Workshops** at various locations on topical issues involving institution, industry, the farmers and other stakeholders. The Workshop was designed to provide opportunity to all the stakeholders, for sharing the knowledge and it's dissemination for the formulation of policy, which became a guiding principles for achieving goal and objectives of smart horticulture. Deliberation in workshop on the issues in the thematic areas provided more time for discussions to arrive at logical conclusion. In past, 11 workshops have been organised, besides, supporting conferences, symposia and Sangosthi, at different locations with various themes to catalyse the efforts of farmers, which have succeeded in empowering farmers with new knowledge and providing policy frame work. During the year one workshop and a panel discussion was organized.

During the year 2021, CHAI supported and partnered in Global Conference on **Innovative Approaches for Enhancing Water Productivity in Agriculture Including Horticulture**, organised by ASM Foundation, New Delhi at PJTSAU, Rajendranagar, Telangana, which was a great success in terms of participation, technical contents and outcome. Kisan Sangosthi at Pusa held on 3rd September was also supported. The Chairman, Dr. H.P. Singh, delivered a keynote lecture on micro-irrigation, horticulture and innovation at various conferences. The lecture attracted lot of discussion. Dr. Singh was Chief Guest and the Guest of Honour in many conferences. The year 2020 and 2021 were highly challenging and the conference to be organised was deferred. However conferences were organised on line on Zoom or Meet platform.

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Recognising the role of CHAI in transforming Horticulture/Agriculture, there has been an overwhelming responses and the fellowships have reached to 396, including Institutional and Corporate Fellows. The growing interest for joining hands with CHAI from corporate, institutions, societies and individuals has build up confidence to serve the community for achieving the mandate of the confederation, is highly encouraging. I am confident that the CHAI shall emerge as an organisation to make us proud, to be its fellow, for the furtherance of agriculture/horticulture. I congratulate all the awardees of CHAI. I express my heartiest thanks to all the fellows for their effective cooperation. I thank all, who helped in bringing out this CHAI-Annual Report. I am sure for the continued support of all the Fellows. Finally, I look forward for making the Confederation global, second to none, in the service to mankind with focus on Horticulture.

Dr. H.P. Singh

The Founder and Chairman

EXECUTIVE SUMMARY

The Confederation of Horticulture Associations of India (CHAI) continued its efforts for the furtherance of horticulture/agriculture by bringing together, the organisations and individual, to work together and achieve the goal of technology-led development and provide strategic solutions to the problems. National/International conferences and workshops were organised to share knowledge and develop policy papers. The CHAI continued to recognise the contributions of scientists, students, farmers and extension workers through the awards and rewards. The CHAI also published International Journal of Innovative horticulture, and strategic papers for innovations in horticulture.

During the year, award and fellowships of 2020 and 2021 were conferred on selected nominations. **CHAI-Honoured Fellow Award** was conferred on **Dr Rita Sharma, IAS**, Former Secretary to GoI., MHRD, (absentia) and **Dr. Shailendra Joshi, IAS(Retd)**, Former Chief Secretary, Government of Telangana, for their outstanding contribution and leadership of par excellence. **CHAI- Honorary Fellow Awards** were conferred on **Dr. Chindi Vasudevappa**, VC, NNIFTEM, Sonapat, Haryana; **Dr. Ajoy Kumar Singh**, VC, BAU, Sabour, Bhagalpur (Absentia), Bihar, **Dr. Tej Partap**, VC, G.B.P.U. A. & T, Pantnagar, Uttarakhand, **Dr. Ajeet Kumar Karnatak**, VC, VCSGUUH&F, Bharsar, Pauri Garhwal. **Prof. Arvind Kumar**, VC, RLBCAU, Gwalior Road, Jhansi, U.P, (Absentia), **Prof. (Dr. Nazeer Ahmed**, Former Vice-chancellor, SKUAST, Srinagar (Absentia), **Dr. D.R. Singh**, Vice-Chancellor, (CSAUA&T), Kanpur, **Dr. S.D. Sawant**, Vice-Chancellor, BSKKV, Dapoli, **Dr. Arvind Kumar**, DDG (Research), ICRISAT, Hyderabad, **Dr B N S Murthy**, Director, IIHR, Bangaluru, **Mr. Haokholet Kipgen**, Former Minister, Govt. of Manipur, Senapati, Manipur and **Dr R C Srivastava**, Vice-Chancellor, DRPCAU, Pusa, Bihar for their contribution and providing leadership of par excellence. The **CHAI-Life Time Achievements Award** was conferred on **Dr. S.B. Dandin**, Former-VC, UHS, Bagalkot (in absentia) and **Dr.Pallem Chowdappa**, VC, BES & TIU, Anantapur, A.P. **CHAI-Dr R S Paroda Award** for excellence in research was bestowed on **Dr. Harshawardhan Choudhary**, PS, DVS, ICAR-IARI, New Delhi and **Dr. Sanjay Sahay**, Associate. Prof.-cum-Senior Scientist, BAU, Sabour, Bihar (Absentia), **CHAI- B H Jain Award** for excellence in extension was conferred on **Dr.V VSadamate**, Agril. Extn.Spc.& Former Adv.Agric, PC, GoI., New Delhi, **Dr Soman**, Sr. VP, Jain Irrigation Systems Ltd, Jalgaon, Maharashtra, **Life Time Recognition Award** was conferred on **Dr S K Chakrabarti**, VC, UBKV, West Bengal, **Dr. J. Kumar**, Registrar, CoA, G.B.P.U.A.& T, Pantnagar and **Dr. Chiranjivi Chaudhary**, Chief Conservator of Forest, AP, **CHAI-Appreciation Award** was conferred on **Dr. Anitha Karun**, Director (In-charge), CPCRI, Kasargod, Kerala (Absentia), **Dr. R. Thangavelu**, NRC for Banana, Tirichirapalli, Tamil Nadu, **Dr. Jai Singh Parihar**, P.O. Bopal, Ahmedabad and **Dr. Major Singh**, Director, DOGR, Rajgurunagar, Pune, Maharashtra. The **CHAI-JISL Fellowship** was conferred on **Dr. K. Murlidharan**, PS&Head, CPCRI, Kasararagod, Kerala (Absentia), **Dr. Pramod Kumar Gupta**, Joint Director, NHRDF, Pune, Nasik. (Absentia), **Dr. Awani Kumar Singh**, PS (Veg./Hort. Sci.), CPCT, IARI, Pusa, New Delhi, **Dr. Dinesh Kumar**, PS (H), ICAR-CCRI, Nagpur, Maharashtra. **Fellow of CHAI** was conferred on selected nominations from across the country. Various categories of award have been finalised for the year 2022 which shall be conferred on 28th May, 2022 at CSAUA&T, Kanpur, U.P.

The Chairman provided advisory services to many companies and individual farmers for improving returns through adoption of advanced technologies. He chaired, RAC of 3rd ICAR Institute and provided his guidance. He continued as Independent Director in Board of Jain Irrigation Systems Ltd and Vindyalchal

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Agro to provide his guidance. He also provided consultancy for H P SHIVA project in Himachal Pradesh through EY, New Delhi.

The CHAI continued to publish International Journal of Innovative Horticulture, Volume 9 has been published and circulated, and Volume 10 has been processed for publication. Award and Fellowships, Year Book and Annual Report were also published. During the year the CHAI Awards nomination have been finalised, which will be conferred to selected nominations. The chairman inaugurated many events, on line and was part of important meetings and delivered many keynote Lectures and plenary lectures in national conferences and workshops.

The AGCM of CHAI, was held on 16th September, 2021 where, beside the agenda, selected candidatures were conferred the Fellowships. The Genesis mission, vision and activities of CHAI was released and circulated. The inputs from the fellows were noted. Appreciation for the Chairman was placed on the record by the Fellows for the progress and achievements. The meeting of the Board of Directors was held in every quarter, which reviewed the progress and approved the decisions taken by the chairman for effective functioning. During the year financial position was further strengthened despite expenditure. The balance sheet of CHAI is improving and corpus fund of 100 lakh has been created. Recognising the progress of CHAI and its achievements, many organisations and individuals have joined. The numbers have risen to 396 including institutions.

Dr. H.P. Singh
The Founder and Chairman

ABOUT OBJECTIVES, GOAL, MISSION AND ACTIVITIES OF THE CHAI

Confederation of Horticulture Associations of India (CHAI), an ISO- 9001:2008 certified non- profiting 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. The CHAI, with specific objectives of strengthening, coordinating, facilitating and converging policies at the grass root level for sustaining integrated development nationally and internationally, is emerging as a think-tank as well as a consultative body. The mission and objectives of CHAI and its network include, *inter alia*, to serve as a platform to provide critical inputs to public policy on major issues concerning innovations in facilitating the development of rural economy and promote development of rural India, in the global context and dimensions. The CHAI is also committed for capacity building at all levels and 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 organises various national/international/global conferences and workshops for the exchange of informations 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 News Letters. **International Journal of Innovative Horticulture**, which publishes scientific articles, short notes, reviews, articles and case studies, is brought out six monthly. To promote innovative ideas, the CHAI has instituted many awards which inspire individuals and team for the innovations and excellence. The CHAI offers various categories of Fellowships i.e. organisation, associations, corporate, 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 has established its units in many states to serve agriculture/horticulture at regional level also.

Mission

Development of agriculture/horticulture by providing strategic solutions to the problems, utilising the services of talented experts in the field of agriculture/ horticulture, and disseminate the knowledge.

Vision

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

To play a catalytic role, in addressing a concern of food and nutritional security and also livelihood options, 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, Governmental and Non-Governmental organisations.
- To establish education and training institutions for human resource development and skills upgradation 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 capitalise 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 have been 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, CHAI-Honoured Fellowship for leadership of par excellence, the CHAI-Life Time Achievement Award for distinguished life time contributions in horticulture, the CHAI-Honorary Fellowship for noticeable contributions and commitment to furtherance of horticulture, the CHAI-Dr. R. S. Paroda Award for excellence in research and academics, the CHAI-Dr. B.H. Jain Award for excellence in transfer of knowledge and diffusion of technology, and the CHAI-Ram NandanBabu Award for excellence in farming. The CHAI-Life Time Recognition Award has been instituted to recognise outstanding contributions and providing leadership in specific crop commodity. The CHAI-Appreciation Award is given for distinguished contributions and excellence in the field of specialisation. To encourage the students, the CHAI has instituted the CHAI-Dr. Ray Best Dissertation Award in recognition of significant post graduate research work. CHAI-Best Paper Award is given for scientific article published in International Journal of Innovative Horticulture (IJIH). CHAI Fellowship is conferred to subscribers for their commitment in furtherance of agriculture/horticulture. The CHAI-JISL Fellowship is provided for training abroad to meritorious fellows. During the year the CHAI instituted Achiever's Award to recognise the fellow who excelled in their career and reached to the level of Vice Chancellor or equivalent owing to outstanding contributions and leadership quality. A CHAI- Associate Fellow was also instituted to recognise meritorious and young upcoming scientist. Considering the needs for dissemination of science based knowledge among scientists for the furtherance of agricultural/ horticultural science, an International Journal of Innovative Horticulture (IJIH) is also being published besides newsletter, books, annual report, CHAI Year Book and GyanManthan, which have over whelming response.

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 seeds and planting material production and above all coordination, planning and execution of project and its final s evaluations.
- More than 325 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 Bengaluru and to attend to all the types of work for business solution options.
- The CHAI is also a non-profiting company, and has established network with institutions, academy, corporate, business house, NGOs and also International organisations.
- 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 CHAI

The Confederation has catalysed the development of Horticulture though partnering in activities of conference organised on various emerging issues, which has helped in developing strategies for research and development. The conferences supported in past are **National Conference on Production of Quality Seeds and Planting Material - Health Management in Horticultural Crops**, 11-14th, March, 2010 New Delhi; **National Conference on Horticultural Bio-diversity for Livelihood, Economic Development and Health Care**, 28-31st, May, 2010, Bengaluru; **International Conference on Coconut Biodiversity for Prosperity**, 25-28th, October, 2010, Kasargod, Kerala; **Global Conference on Meeting the Challenges in Banana and Plantain for Emerging Biotic and Abiotic Stresses**, 10-13th, December, 2010, Trichy, Tamil Nadu; **National Symposium on Molecular Approaches for Management of Fungal Diseases of Crop Plants** 15-20th, December, 2010, Bengaluru; **National Conference on Horti Business-Linking Farmers with Market**, 28-31st May, 2011, Dehradun, Uttarakhand; **Global Conference on Augmenting Production and Utilization of Mango: Biotic and Abiotic Stresses**, 21-24th, June, 2011 Lucknow; **Global Conference on Horticulture for Food, Nutrition and Livelihood options**, 28-31st, May, 2012, Bhubaneswar; **National Conference on Sub-Tropical Fruits**, 9-12th, January, 2013, Navsari, Gujarat; **Brain Storming Session on Nano-Bio-Information Technology for the Development of North Western Himalayan States**, 12-13th, July, 2013, Pantnagar, Uttarakhand; **National Workshop on Urban and Peri-Urban Horticulture**, 21st December, 2013, Navsari, Gujarat; **National Conference on Value Chain Management in Mango**, 20-22nd, March, 2014 Kolar, Karnataka; **Global Conference on Technological Challenges and Human-Resource for Climate Smart Horticulture- Issues and Strategies**, 20-31st, May, 2014, GAU, Navsari, Gujarat; **National Conference on Dynamics of Urban and Peri-Urban Horticulture**, 21st October, PHD house, New Delhi; **National Conference on Dynamics of Smart Horticulture for Livelihood and Rural Development**, at MGCGV, Chitrakoot,

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Satna, Madhya Pradesh, 28-31st May, 2015. The CHAI was a Knowledge Partner in Smart Agriculture-Geo Agri with the theme Technologies empowering Indian Agriculture organised at NOIDA on 2nd -3rd March 2016. The Confederation supported the conference organised on Pomegranate, at JISL, Jalgaon, April, 2016. The CHAI partnered a **Global Conference on Challenges and Options in Agriculture** organised at Jain Hills, Jalgaon, Maharashtra, on 28-31st May, 2016, The CHAI supported the organisation of two days **conference on pomegranate** at Jain Hills Jalgaon, on 16-17, April, 2016. The CHAI facilitated the organisation of **KisanSangosthi, on 3rd September** at Mahmada and 1st November at Dholi, Muzaffarpur. In the year 2017-18, CHAI supported the organisation of a **National Conference on Technological changes and innovations in Agriculture**,organised at JAU, Junagadh, Gujarat 28-31st May, 2017. **Knowledge Sharing Workshop on Tropical Fruits-banana and pomegranate** was organized at Hotel Masineni Grand, Anapturamu, A.P., on 5th November, 2017. The **National Conference on Challenges and Options in Litchi Production and Utilisation**, 6-7th June, 2017, Muzaffarpur wasorganised a **National Workshop on Technological Changes and Innovations in Potato and Pomegranate-Production for Utilization for Enhancing Farmers' Income**, was organized at Deesa, Banaskantha, Gujarat, October 06, 2017. The Chairman, as the Chairperson of ASSOCHAM Council on Agriculture and Food Security organised many meetings and conferences and chaired meetings, where CHAI was highlighted for its contributions. National Conference and Awards Function -**Organic World – AdvantageIndia**was organised on 21st March, 2018, at Hotel Meredien, New Delhi, by the ASSOCHAM in association with Ministry of Agriculture and Farmers' Welfare. The CHAI supported and partnered in **National Conference on Intensification and Diversification of Agriculture for enhancement of income and livelihood**, at RAU, Pusa, Samastipur, Bihar, 28-31, May, 2018. In the year 2019, the CHAI supported and partnered an **International Conference on Innovative Horticulture and Value Chain Management – Shaping Future Horticulture**,organised at Pantnagar, Uttarakhand, 28-31, May 2019 by ASM Foundation, New Delhi. In the year 2020, the CHAI partnered a Webinar on **Post Pandemic (COVID-19) Challenges and Options in Agriculture including Horticulture**organised by ASM Foundation, New Delhi, on 28th May, 2020. The webinar was a grand success in terms of participation and outcome. CHAI also patterned in organising the conference by ICFA, New Delhi, CNRI, New Delhi, and CALIDA, India. In 2021, CHAI could organize a webinar “New Paradigms in Production and Utilisation of Fruits and Vegetables for Health and Livelihood” organised by CHAI on 11th February, 2021 to commemorate International Year of Fruits & Vegetables(IYFV) by UN which was a grand success and more than 200 stakeholders could participate. The CHAI had partnered in organizing a **Global Conference on Innovative Approaches for Enhancing Water Productivity in Agriculture including Horticulture**,organised at PJTSAU, Rajendranagar, Hyderabad, Telangana from 16-19 September.2021. During the year 2022, CHAI is partnering and supporting a **National Conference on Climate Resilient and Sustainable Development of Horticulture** being organized at CSAUA&T), Kanpur, Uttar Pradesh from 28th to 30th May, 2022.

Conferences/Workshops Organized

The CHAI has been organising workshop on the topical issues. First workshop organised by the CHAI was on **Urban and Peri-Urban Horticulture, Bangaluru**, on 2nd March, 2013 with the theme–Greening the cities, utilising the waste, meeting the needs and servicing the environment. The workshop deliberated issues and concluded adoption of Bangalore Declaration for catalysing the Urban and Peri-Urban Horticulture. In the year 2014 on 1-2nd March, CHAI organised a **Knowledge Sharing Workshop on Tropical Fruits - Value Chain Management for Enhancing Farm Profitability**. An **International Conference on Floriculture and Landscape Gardening –Challenges and Opportunities**: was organised at Pune on 27th February. The CHAI organised a National Workshop on Quality Production of Banana for Export and Domestic Market, 29th May 2016 at Jain Hills Jalgaon. A workshop on **Dynamics of Challenges and Options in Integrated Aquacultures**, was organised on 2nd November, 2016 at

Patna, One day **National Workshop on Technological Changes and Innovations in Pomegranate Production and Utilization for Enhancing Farmers' Income**, was organised on 26th September, 2016, at JAU, Junagadh, Gujarat,. With the similar objectives and theme, one day **Workshop was also organised at Agriculture University**, Jodhpur, Rajasthan, India on 10th December, 2016, for the benefit of Rajasthan farmers, which provided an options to discuss pomegranate for improving the income of the farmers through technological interventions. The CHAI organised a two days National Conference on **Perspective of Challenges and Options in Maize Production and Utilization**, 3-4th March 2017 at DRPCAU, Pusa, Samastipur, Bihar. **National Workshop on Technological Changes and Innovations in Potato and Pomegranate-Production & Utilization for Enhancing Farmers' Income**, was organized at Deesa, Banaskantha, Gujarat, October 06, 2017. A **National Conference on Challenges and Options in Litchi Production and Utilisation** 6-7th June, 2017, Muzaffarpur were organised. A **Knowledge Sharing Workshop on Tropical fruits-Banana and pomegranate**, was organised at Anantpuram, 5th November, 2017, 11th in series. A **national webinar on National Education Policy – Perspective and Prospect in Agri**, was organised in September, 2020 in association with MPUAT, Udaipur, which brought out the fact that the NEP is innovative and needs to be opted in agriculture. A webinar on International Year of Fruits and Vegetables, 2021 on the topic **New Paradigm in Production and Utilisation of Vegetables**, was organised by the CHAI on 11th Feb., 2021, in association with Dhanuka Agritech. The webinar had participation of honourable minister of Agriculture and Farmers' Welfare, Member, NITI Aayog, DDGs, Vice Chancellor, Scientists, Farmers and students. Beside, the CHAI also supported webinar organised by various institutions. The Chairman delivered keynote lecture, chaired technical sessions and also moderated the conferences. These activities received all the appreciations for the CHAI, which may go a long way in achieving the Goal. A **National Workshop** was also organized on **Innovative Approaches for Enhancing Water Productivity in Dry Land Eco-system**, 29th Sept., 2021.

Meetings of Board of Director and General Council Meeting

1. To review the technical and financial progress, the Board of Directors meets as per the needs, at least, 4 times in a year. General Council meets is held once in a year on 28th or 29th May. First Executive Council and General Council meetings were held on 29th and 30th May, 2012, respectively, and distinguished fellows were honoured with CHAI Fellowship for their commitment to furtherance of horticulture, and various awards were conferred. Second Executive Council and General Council meeting were held on 29th May, 2013 at Jalgaon, wherein various issues were discussed. Besides, report of secretary and treasures, the distinguished members were conferred with the fellowship of CHAI. All the members, present, appreciated the efforts of the Chairman and ensured for the support in achieving the objectives of the CHAI. The **Council authorised the Chairman** to take all the action, as he deems it fit, in the best interest of CHAI. Third Annual General Council Meeting was held at Navsari on 29th May 2014, where in fellowships were conferred to all the members, who joined CHAI in 2013-14. 4th Annual General Council Meeting was held at MGCGV, Chitrakoot, Satna, Madhya Pradesh on 29th May 2015. 5th AGCM of CHAI was held at JISL, Jalgaon, 28th May, 2016. The 6th AGCM of the CHAI was held at JAU Junagadh, 28th May, 2017. 7th AGCM of the CHAI was held at DRPCAU, Pusa, Samastipur, Bihar on 28th May, 2018. Dr. A.K. Srivastava was the Chief Guest. Awards and Fellowships were conferred to individual and Institutions, for their contributions. Fellowship for attending IHC, 2018 was also announced. The overall progress was very much appreciated. 8th AGCM of CHAI was held at GBPUAT, on 28th May, 2019, where in Dr C D Mayee, Patron, CHAI was the Chief-guest. Award and Fellowships were conferred on individual and institutions. Report of secretary and financial reports were presented and approved, All fellows including the chief-guest

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appreciated the progresses and authorised the chairman to take up all the activities as he deems it fit. The 9th and 10th AGCM of CHAI was held at PJTSAU, Hyderabad, Telangana. Dr. S.K. Pattanayak, Former Secretary, Ministry of Agriculture and Farnes' Welfare was the Chief Guest. The meeting reviewed the progress and financial status. The corpus has reached to Rs. 90 lakh. The progress was appreciable. Selected candidatures were given various awards. This year to recognise the excellence in career of fellow of CHAI-Achievers Award were conferred to selected candidatures. Various awards and fellowships were conferred to selected nominations.

Participation in Exhibitions

The Confederation of Horticulture Associations of India continues to participate in Horti Expo, to exhibit the activities of CHAI to draw the attention in furtherance of horticulture.

Institution of Awards and Fellowships

To recognise the contributions 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 recognise the distinguished and noticeable services of individuals and organisations. The distinguished personalities, who have provided leadership of par excellence for the development of Indian Agriculture are recognised by conferring the **CHAI-Honoured Fellow**. The **CHAI-Life Time Achievement Award** is given for outstanding contributions, in research and development of horticulture. The distinguished members are also honoured with the **CHAI-Honorary Fellow**, for their excellence and commitment to furtherance of horticulture. The **CHAI-Dr. R.S. Paroda Award** is given for excellence in science and technology, The **CHAI-Dr. B H Jain Award** recognises an excellence in knowledge empowerment and dissemination and the **CHAI-Ram NandanBabu Award** recognises innovative farmers for their excellence in farming, the **CHAI-JISL Fellowship** is given for visit abroad to attend conferences and training. The **CHAI-Life Time Recognition Award** is given for outstanding contributions and providing leadership in specific crop commodity, The **CHAI-Appreciation Award**, is given for distinguished contributions and excellence in the field of specialisation. The **CHAI-Dr Ray Dissertation Award** is given for Best Dissertation at master's level and the **CHAI- DrKirti Singh Best Paper Award** is given for the best scientific article published in IJH. The distinguished members including institution with the commitment to the furtherance of horticulture are conferred with Fellow of CHAI in different categories. The Achievers' Award was also instituted to recognise the excellence in career of CHAI Fellow. A fellowship – Donor fellow has also been started to recognise the entrepreneur in horticulture. During the year **CHAI-KautilyaLokniti Award** has been instituted to recognise the contributions to public policy, strategic analysis and Governance and also Ancient Philosophy.

PUBLICATIONS

International Journal of Innovative Horticulture

Considering the needs for dissemination of science based knowledge among scientists for the furtherance of horticultural science and on 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 (IJH)** was started. 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 published by CHAI, has an international look and shall consider original papers on multi-disciplinary aspects. The journal is published bi-annually. The types of papers include Original Research Articles, Reviews, Case studies, New cultivars and technologies, Commentaries and opinions, Policy issues, Abstract of Ph.D. thesis, Book Reviews, Features, Colloquia and Workshops. The 10 volumes have been published and the NAAS also enlisted the Journal. The publication of Volume 11 (1), 2022 is in process.

MoU Development with Organisations

The CHAI has also developed MoU with DainikJagran for effective outreach and technological up-gradation and work as knowledge partner.

Membership Benefits of CHAI

The CHAI team consists of different categories of membership i.e. Institutional, Corporate, Association, Non-profit Organization (NPO) and Individual Members. Membership of the Confederation is open to individuals/ firms, organisations and societies/associations subscribing to the objectives of the CHAI by donation ranging from Rs.35000 to Rs.1,50,000/-. The CHAI being a professional academic association envisions promotion of horticulture/agriculture in the country.

- Associations, corporate, entrepreneurs and individuals who are committed for the furtherance of horticulture shall request for the membership. Right to admission rests with Board of Directors and the Founder and Chairman.
- Nominations shall be accepted for consideration, which are endorsed by two members of CHAI or Institutional Head certifying their candidature.
- Member admitted to the CHAI shall be given a certificate of subscription, with a plaque of honour in the Annual Council Meeting as Fellowship of CHAI.
- Every member can attend the Council's meeting, whenever called, on his own cost or at the cost of CHAI, depending upon the terms and conditions, as approved by the Founder and Chairman.
- All the members/fellows are entitled to receive the International Journal of Innovative Horticulture for 15 years, free of cost.
- All members/fellows shall be eligible to request for awards including Dr. R.S. Paroda, Dr. B.H. Jain award, Ram NandanBabu Award and any other awards instituted by CHAI.

Members/Fellows shall be eligible to seek the financial assistance, if his or her paper is accepted in International Conference/ Symposia, which shall be considered on merit by the committee constituted by the Founder and Chairman. Only one or two fellowships for visit abroad will be available in a year.

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Confederation of Horticulture Associations of India, New Delhi (CHAI)
(An ISO 9001:8002 certified organisation)

FELLOWSHIP FORM

To

The Chairman
Confederation of Horticulture Associations of India (CHAI)
249, Kargil Colony, Dwarka, Delhi - 110075

Sir,

May I request you to kindly enrol me as a Donor Corporate Fellow Association/Institutional/ corporate/Individual Fellow of CHAI. I agree to abide by all rules and regulations of the Association. I am enclosing herewith a Cheque* / Demand Draft/e-transfer (drawn in favour of Confederation of Horticulture Associations of India, New Delhi) for Rs. _____ as my Subscription Fee. My particulars are given below:

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Activities of the CHAI for the Year 2021-22

1. Support to Conferences / Workshops as a knowledge partner

1.1 13th Swadesh Prem Jagrithi Sangosthi-2021 and the Global Conference on Innovative Approaches for Enhancing Water Productivity in Agriculture including Horticulture, scheduled to be held at PJTSAU, Rajendranagar, Hyderabad, Telangana from 16th to 19th September, 2021

The CHAI supported the organisation of 13th Swadesh Prem Jagrithi Sangosthi-2021 and the Global Conference on *Global Conference on Innovative Approaches for Enhancing Water Productivity in Agriculture including Horticulture* organised by the Lt. Amit Singh Memorial Foundation, New Delhi and Professor Jayashankar Telangana State Agricultural University (PJTSAU), Telangana, at Rajendranagar, Hyderabad, from 16th September to 19th September, 2021. The purpose of the conference was to have international dialogue, for analysing past trend in innovative horticulture

and value chain management, identify innovations for envisioning the task for ensuring food and nutritional security and enhancing farmers income.

The conference was attended by over 350 delegates from across the country and abroad, including farmers, students and representatives from industries. This conference provided opportunity to all the stakeholders to share the knowledge and





disseminate for formulation of strategic recommendations. The conference had 15 technical sessions to deliberate in thematic areas. The first technical sessions was devoted for the plenary lectures directed toward Paradigms in

Improving Water Productivity in Agriculture including Horticulture - Challenges and Options. Discussion on topical issues, included Technological advancements in improving water productivity and value chain management, Innovations in Production System of Perennial Horticulture for Effective Value Chain, Innovations in Production System for Vegetables, Tubers and Spices for Effective Value Chain, Innovations for Climate Smart Production Systems in Horticulture, Varietal improvement for enhancing water productivity, Water Management for enhancing water productivity, Nutrient management for enhancing water productivity, Pest and disease management for enhancing water productivity, Field approaches for enhancing water productivity, Farmers' Participatory Discussion on Enhancing Productivity in Agriculture and. Besides the conference, farmer quiz and various competitions were also organised.

The technical session were : Paradigms in Improving Water Productivity in Agriculture including Horticulture-Challenges and Options; Technological advancements in improving water productivity; Approaches for enhancing water productivity in crops; Approaches for enhancing water productivity in perennial horticulture; Approaches for enhancing water productivity in annual horticulture; Varietal improvement for enhancing water productivity; Water Management for enhancing water productivity; Nutrient management for enhancing water productivity; Pest and disease management for enhancing water productivity; Field approaches for enhancing water productivity; Farmers' Participatory Discussion on Enhancing Productivity in Agriculture and horticulture; Farmers' Quiz for Knowledge Empowerment of the farmers through participation and Student's Participatory Presentation and Discussion on Water Productivity besides a **National Workshop on Enhancing Water Productivity and Resilience to Climate Change in Rainfed Region**. A panel discussion for enhancing water productivity was also organized. After deliberation and discussion in 14 technical sessions with the presentation of 9 plenary lectures, 31 keynote presentations, 65 oral presentations, recommendations were developed and were presented in valedictory session for adoption. The recommendations which emanated are:

Recommendations

1. Water productivity is a holistic approach and the maximization in productivity must be achieved by plant and land factors. Plant factor are crop varieties, seeds and planting material, management of production, pest management and disease control and management of produce - a value chain management. Land factors are soil health and water management. In field, water productivity can be enhanced using micro irrigation, which has proven its efficiency.
2. Water is critical resource for sustainable development, which is getting scarcer and meeting multifaceted uses is a great challenge of the future. The long-lasting solution to water problem could be addressed through water governance and management. A new paradigm is encapsulated in integrated water resource management, which promotes land development and management of water and related resources, for maximizing the related economic and social welfare without compromising the sustainability of vital system. Therefore, integrated system of water managements requires to be promoted for improved water productivity.
3. Micro-irrigation maintains the soil moisture to the level, which reduces the effects of wet and dry period. During the drying cycle, available moisture declines while it is maximum in surface irrigation. Recognizing, the likely needs for micro-irrigation Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, launched a national mission on micro-irrigation in 2010, which aimed at increasing water use efficiency, crop productivity, and farmer's income and now is operated under PMKSY.
4. Water and nutrients are most critical inputs and account for a major share in cost of production. With protective irrigation and balanced use of nutrients, production cost gets reduced. The Govt. of India is operating, Prime Minister KrishiSinchaiYojna (PMKSY), to achieve the convergence of investment at field level, as to enhance the productivity of water through water saving technologies, **more crop per drop**. Therefore, there is a need for covering more areas under micro-irrigation and fertigation system in mission mode approach to enhance the income of the farmers and the productivity of water.
5. Water deficits are threatening sustainability of agriculture in many parts of the world which demands efficient use of the limited water resources to avoid further expansion in water deficit areas. Increased water demand for agriculture will further stress the terrestrial and aquatic ecosystems and intensify competition for water resources. Improving the "Water Productivity (WP)" of agriculture can reduce the need for additional water and land in irrigated and rain-fed ecosystem systems. Water saving achieved from improved water productivity in agriculture will serve the need to sustain ecosystems. Therefore, enabling policy and enhanced investment should be given priority for improved water productivity.
6. Policies in the past have invariably been for the creation of water potential, whereas utilization of created potential and enhancement of irrigation efficiency have received little attention. With current level of irrigation efficiency, even after exploitation of all the available resources, more than 50 per cent area may remain rainfed. This scenario demands for increasing water productivity in agriculture, both under irrigated and rain-fed systems, through technologies and priority investment.

7. Climate change, a cause of concern globally, will have impact on agricultural crops due to erratic rainfall, and will lead to more demand for water, and enhanced biotic and abiotic stresses. However, the changes will not only be harmful, as enhanced CO₂ concentration may enhance photosynthesis, and increased temperature may hasten the process of maturity. Innovations and concerted efforts may convert weakness into the opportunities. Thus, addressing the issue of water productivity need attention.
8. Micro- irrigation system is an irrigation system with high frequency application of water in and around the root zone of plant system, which consists of a network of pipes along with a suitable emitting device. A typical micro-irrigation system has dripper/micro sprinkler/sprayer, distribution lines and fittings, control head system, fertiliser tank and fittings. Emitters are to dissipate pressure and discharge water in micro-irrigation system. Ideally, it permits a small, uniform flow of water at a constant discharge, which does not change significantly throughout the field. Many designs have been devised which are manufactured in the country. Thus, this system adoption must be enhanced for improved water productivity.
9. Since, micro-irrigation greatly enhances water, fertilizer and energy use efficiency and promotes precision horticulture/agriculture, and the sustainability could be achieved without the burden of environment degradation. Agriculture and horticulture have to gain much for meeting the challenges of more production with declining land and water by adoption of efficient techniques like micro irrigation towards high water productivity.
10. Impact of the micro irrigation on enhancing water productivity and income of the farmers is high, especially when nutrients are applied through the system referred as a fertigation. Appreciable technological changes are taking place. Farmers are shifting to automated irrigation system for enhance precision and higher profit. This has led to improved productivity. Thus, to sustain these, many policy changes and higher investment would be needed to promote micro-irrigation and achieve enhance water productivity.
11. Research activities in the field of micro-irrigation system were conducted in ICAR institutes and State Agricultural Universities, AICRP on application of plastics in Agriculture, AICRP on water management, DRIPNET project and AP cessadhoc schemes. The research activities are mainly confined towards crop-water requirements, crop geometry, design and layout of the system, cost-benefit analysis and evaluation studies. Results have categorically exhibited that micro-irrigation can save up to 50 to 84% water with enhancement of yield up to 60 - 100% under varied agro-climatic and crop conditions. The higher yield, under micro-irrigation system is attributed to favourable crop growth due to available soil moisture and required volume of watered soil mass, which provides optimum environment for root growth of the plant. The micro-irrigation systems could also be used with adverse soil or water conditions. Thus, this technique has to be promoted to achieve higher water productivity.
12. Impact analysis of micro irrigation revealed that farmers invariably introduced high value horticultural crops like grapes, banana, mango, cashew nut and coconut after installing the drip system, and achieved yield increment ranging between 41% (grapes) to 141% (Pomegranate) over the state average yield. Economic analysis of 695 beneficiary farmers and 76 non-beneficiary (who installed drip system without any Govt. subsidy) farmers indicated that the cost was

recovered in a period of less than three seasons in majority of the cases. Therefore, this system must be promoted.

13. Micro-irrigation which includes sprinkler and drip systems has the synergistic interaction with improved cultivar, water and fertilizer and could be seen as the congruence of sustainability, productivity of water and equity. Thus, use of micro-irrigation hold key for improved water productivity.
14. The Task Force appointed by Gol, 2003 recognized that agriculture and allied sectors including horticulture will continue to be a prime mover for the growth and prosperity of the nation, which has several challenges. In the quest for improving productivity, water would be the most critical input. Micro-irrigation has become a pivotal element of integrated water use system with many agro-ecological, socio-economic and environmental advantages. Thus, micro-irrigation could be a tool for effective management of resources, which saves water, fertilizers and electricity.
15. Technological advancement is also noted for sensor-based pulse irrigation which further saves water but needs higher investment. We have also seen successful application of integrated system of irrigation having approach of Source to Roots, and it has been demonstrated that farmers' income can be enhanced even in dry area by micro-irrigation with efficient crop management. Technological evidences are suggesting that micro-irrigation is highly beneficial for increasing yield and saving water, not only in horticultural crops but in sugarcane, cotton, pulses and cereals including paddy and wheat. Recognizing the importance of micro-irrigation in agriculture, for enhanced income and saving of water, Honourable Prime Minister of India, has emphasized, time and again for adoption of micro-irrigation not only in row cops but also in field crops.
16. Development of short duration cultivars, management practices have enhanced the yield manifold in potato, tomato, capsicum, watermelon, and banana. Therefore, a cultivar and management practice which enhances the yield per unit time has the potential to enhance water productivity. Therefore, less water requiring variety, quality seed and good agricultural practices should be adopted for improved water productivity.
17. Reducing evaporation from the soil and transpiration from weeds is an obvious way in which non-beneficial depletion can be reduced at the top boundary of the domain of interest without affecting crop yield. This could be achieved by mulching and effective weed control and thus, achieving enhanced water productivity.
18. Partial Root Drying (PRD) is an important irrigation technique that tends to decrease water use in crops. In this PRD technique, one-half of the root zone is irrigated while the other half is allowed to dry out. This treatment is then reversed allowing the previously well-watered side of the root to dry up while fully irrigating the previously dried side. This PRD technique is based on the knowledge of root-to-shoot chemical signaling in drying soil. This practice is aimed at increasing the Water Use Efficiency (WUE) and reducing the water requirement of crops, resulting in enhanced water productivity. Alternate irrigation in furrow irrigation and alternate drip in new crop are recommended to improve water productivity.

19. Crop water productivity can be increased either by increasing crop yield, or by reducing WC and maintaining the yield level, or by using both methods. Many pathways for WP improvement are directly related to improving overall farm management (irrigation, fertilisation, plant density, crop protection, etc.). Sometimes, to be more specific, Crop Water Productivity (CWP) is considered, which refers to crop yield over applied water also contribute to land productivity, thereby increasing farming revenues through its effect on input management.
20. At present, the country has coverage of about 12.5 million hectares in micro-irrigation with a plan to cover about 69 million hectares by 2030. Institutional support system linked with public and private enterprise coupled with concerted efforts with identified destination involving all the stakeholders keeping the technology at driving seat and farmers as center of attention is bound to have faster and inclusive growth with the policy of **per drop more crop** to achieve the highest productivity of water.
21. To have the optimum utilization of micro-irrigation the integrated measures such as suitable cropping pattern, use of water, seeds, fertilizer for institutional mechanism for after sales service and maintenance of the system in the field integration with solar pump requires to be adopted.
22. Artificial intelligence can play a major role for smart agriculture in decision making, yield prediction and crops surveillance. A modern artificial intelligence and cloud computing techniques can create technologies related to digital agriculture to improve the overall farm management operations of the fields, which would ultimately improve the crop water productivity; therefore, artificial intelligence technologies may be utilized.
23. Crop diversification with low water requiring crops like pulses, oil seeds, alongwith conservation on-farm field for the renovation of old and new community ponds, water conservation as well as ground water recharge is essential to improve water productivity in rain-fed area.
24. There are many agronomic practices like crop geometric, canopy management, crop sequencing and mulching, use of high yielding and much less water requiring varieties, which can improve water productivity. To achieve a rapid stride in agriculture and horticulture through technological changes, policy initiatives and investments have to be prioritized for food and nutritional security.
25. There is need for mandating micro-irrigation for high water intensive crop like oil palm, sugarcane, banana etc., to improve the water productivity. Precision leveling, alternative wetting, conservation of water, and direct seed rice are some of the practices which can enhance the water productivity and are to be promoted.
26. Although, horticulture has achieved appreciable growth (5.8%) to address the challenges, it needs innovations in technologies through institutional support, as well as import of knowledge and technological backing for the development, through skills. Development strategies should be for cluster approach, linked with post-harvest management and marketing, quality seeds and planting material, precision farming and smart horticulture, environmentally controlled horticulture, and enhanced ICT use to add efficiency for input management, knowledge transfer etc. This would help in improving water productivity.
27. Smart Horticulture is an integration of science and technology, complimented with information technology in consonance with socio-economics, can be adapted to maximize the output. These

integrated approaches, with philosophy of observe, measure and respond, is a smart system of management. The dynamics of smart horticulture is a measure of changes in technologies, needed to address the challenges. There is a need for adoption of smart system of management in horticulture for enhancing farmers' income. Adoption of smart horticulture will improve water productivity.

28. There is a need to build a society of innovators, manufacturers, and technology providers, as the development demands innovation to be at the driving seat for expected output. Therefore, it would be imperative to build an atmosphere of policy framework where innovators and innovative companies make their investments in future technologies.
29. To achieve targeted growth there is a need for effective value chain, the activities starting from conceptualization till it reaches to the consumers, involving all the stakeholders in the chain of production to consumption. With enhanced efficiency of links in the chain, there is enhanced output which improves profitability. Since water is one of the link in value chain it has to be addressed appropriately. In this context utilization of Block Chain Technology holds a key, which needs to be promoted. This will ultimately result in improved water productivity.
30. Improved planting stock through high-tech nurseries and use of hybrids in vegetable must be emphasized to boost the production in horticultural crops. Tissue culture in banana and pomegranate has not only improved the production and productivity, but has multiplier effect on employment and assuring the best of quality plants. Therefore, this technology must be promoted for other horticultural crops assuring effective quality control mechanism. This efficient system will help in improving water productivity.
31. Integrated approach towards the management of pathogens is needed. Practices such as crop rotation, application of micro-nutrients, 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 must be developed for smart management of biotic stress, on the principle of observe, measure and respond to achieve maximum output and results. Improved plant health will improve water productivity.
32. 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-pesticides management, need based chemical management and economics. Intelligent Pest Management should, therefore, be incorporated in climate smart horticulture and agriculture for improving water productivity.
33. Nanotechnology provides opportunities for the development of processes and product, which are impossible to achieve through conventional system. Therefore, use of nanotechnologies in agriculture has to be given emphasis through the appropriate investment on research and development. Diagnostic based on nanotechnology, nano-pheromone for insect, pests and nano-sheets for packing needs must be encouraged through appropriate investment.

34. Linking the farmer with markets is essential for better realization of returns from farm produce, and various models have been practiced. However, understanding the value chain and its dynamics from a small producer perspective is limited. Having the integration with farmers' producer organization is lacking. Therefore, there is a need for strengthening farmer producer organization in terms of skills and investment.
35. A concerted effort with identified goal involving all the stakeholders, keeping the technology at driving seat and farmers as centre of attention, would help in achieving faster and inclusive growth. The extension must, focus on producer aggregation at various levels and provide forward linkages. The existing system must be empowered with knowledge to serve the farmers better with not only technological changes but with new model in marketing. Therefore, there is a need for reorienting extension system.
36. Market reforms and value chain management system should be such to provide easy access to market and better realization of price for the produce. Developing markets and access to credit will be a key to ensure that India's farmers have access to affordable institutional credit for quality agricultural inputs, as well as access to adequate remuneration for the produce. This is essential to enhance farmers' income.
37. There is a need for change in land aggregation policies. The Government of India has already prepared a model act for aggregation of land, which provides opportunity for investment even on leased land. This would also help in adopting technologies and investment on infrastructure. However, it has to be implemented by the states to legalize the land leasing for promoting agriculture efficiency and for achieving needed productivity improvement in agriculture. This would enable the use of technologies which may lead to improved water productivity.
38. As horticulture provides ample opportunity for skilled employment through multiplier effect at various activities from production to consumption having the links in planting material production, input production and supply, packaging, storage, branding and its promotion. There is a strong need to address the horticulture as priority sector having the mission mode approach for value chain management to make horticultural produce more competitive and responsive enterprise.
39. Various schemes for the promotion of horticulture have provided different kind of assistance, namely micro-irrigation, planting material, nursery production, protected cultivation, mechanization, cool chain management, branding etc. However, there is a gap in needed skills and mentoring the farmers for adoptions and management of technologies. Therefore, skill development and mentoring should be a focused part of any schemes to support horticulture. This will help in improving water productivity.

1.2 National Workshop ON Enhancing Water Productivity and Resilience to Climate Change In Rainfed Region

A national workshop was specially designed to address the issues enhancing water productivity and resilience to climate change. Dr B. Venkateswarulu, Former VC, VNMKV, Parbhani and Co-chaired by Dr.V. K. Singh, Director of CRIDA. The conveners of this session were Dr. G. Ravindra Chary, PC AICRPDA, CRIDA, Hyderabad and Dr. Babita Singh, Senior Tech Consultant, NRAA, MoA&

FW, New Delhi. In this session lectures were delivered by the experts. DrBabita Singh initiated the discussion and said about the objectives and activities carried out by NRAA. She also explained the achievements and future plans. The vision of NRAA is to achieve sustainable cultivation in rainfed areas and encourages the farmer in adopting appropriate strategies for making rainfed agriculture a profitable one. The capacity building programmes was done in association with state & central institutions for profitable cultivation. NRAA is engaged in the study of groundwater management in water scarcity areas of Western Rajasthan. Drought Proofing Action Plans (DPAP) were developed for 24 drought-prone districts in association with CRIDA. These DPAP plans mainly include the rainwater harvesting structures and their management, efficient use of plant residues and popularization of integrated farming systems. Water productivity can be enhanced in rainfed areas by suitable crop diversification/ alignment, conservation agriculture, precision water use, fertility management, etc. It was noticed that 168 districts would come under composite index based on composite index analysis. These 168 districts are high priority rainfed districts where interventions are needed to enhance natural resources and livelihood outcomes. Genetic potential of neemgermplasm was assessed for higher yield and oil content. The Water Resource Management project mainly dealt with four aspects, climate risk, groundwater monitoring and management, strategic irrigation, and soil biological fertility management concerning water use efficiency. This project was introduced in three main states (Andhra Pradesh, Odisha and Karnataka) to empower 1.4 million farmers to optimize their water use.

Dr. B. Venkateshwarulu, Former Vice-Chancellor, VNMKV, Parbhani spoke on Effective utilization of water for climate resilience in dryland agriculture. He said that rainfed agriculture should not be neglected as 40 per cent of food grains is obtained from rainfed agriculture and 51 per cent area is occupied. It also supports livelihood of nearly 2/3rd population. The efficient water utilization in rainfed agriculture can be carried out through five pillars of water management. Use of hydrogel for profile moisture storage was recommended in harvesting surplus runoff -Farm pond technology be adopted. Farm ponds should be lined with liners and care of small kuntas is need also Efficient use of harvested water - Sprinkler, portable solar pumps, drip irrigation systems can be used wherever it is possible. Replacement of paddy with fodder crop and linked with the livestock was suggested. Watershed should be transformed into agro-ecology pangram, Integrated use of rainwater and groundwater was emphasized.

Agronomic Management Options for Sustainable Dryland Farming was presented by **V. K. Singh**, Director, ICAR-Central Research Institute for Dryland Agriculture Santoshnagar, Hyderabad. In his presentation he stressed the importance of *in situ* water harvesting methods in rainfed agriculture considering that 52 per cent of the net cultivated area in India is rainfed, which contributes 40 per cent of the food. He highlighted the importance of different *in situ* conservation measures like ridge & furrow, broad bed furrow, conservation furrows, compartment bunding, mulching *etc.*, for diverse rainfed agro-ecologies. Adopting in situ moisture conservation practices enhanced WUE in, soybean and cotton in Vidharbha. Harvesting rainwater should be efficiently used through micro-irrigation techniques like rain gun, drip and sprinklers to overcome the drought and reap higher yields. It was also informed that there was a nearly 35 % increase in pod yield and 28 per

cent higher water use efficiency than the rainfed groundnut through these supplemental irrigations. As per normal rainfall and moisture availability in the particular area, we have a select efficient intercropping system to overcome risk during drought periods and reap higher yields. The locally available organic resources, location-specific integrated nutrition management strategies have to be adopted. Among all, balanced nutrition for crops is important. It was observed that optimum potassium would aid to the mitigation of water stress conditions as K controls water relations in plant growth. Diversification with agroforestry systems and integrated farming systems further improve WUE, farm productivity and profitability.

In keynote lecture entitled “Real-Time Contingency Planning to Cope with Climate Variability in Rainfed Areas of India” was presented by **G. Ravindra Chary**, All India Coordinated Research Project for Dryland Agriculture ICAR-Central Research Institute for Dryland Agriculture, Hyderabad, India. He said that contingency plan is vital due to frequent weather aberrations that are impacting in agricultural production. The losses in agriculture can be overcome by improving the efficiency of production systems and implementing contingency measures on a real-time basis. Contingency plans are either technologies related (land, soil, water, crop) or institutional and policy-based, which is implemented based on real-time. Real-Time Contingency Planning (RTCP) is implemented at the village level. The AICRPDA centres have demonstrated the RTCP by adopting 23 villages in 15 states. The above village farmers were enlightened on two main approaches, *i.e.* drought preparedness and real-time implementation of land, water, crop, soil, nutrient and energy (farm implements) management practices to cope with weather aberrations. The mid-season dry spells can be overcome by foliar sprays of water-soluble NPK (19:19:19) and KNO_3 . Applying these sprays will help reap 15-25% higher yield in different crops than no spray.

This paper entitled “Policy and Management Principles of Water in Rainfed Eco-system” was presented by Babita Singh. Water productivity in agriculture is often used as a criterion for decision making on crop production. It was stressed that rainfed agriculture was not focused in most of the programmes of the Ministry of Agriculture and Farmers’ Welfare and Jalshakti. From rainfed agriculture itself, 47% food grains, 80% pulses, 73% oil seeds, and over 90% nutri-cereals are obtained. If not considered, rainfed agriculture will cause a financial burden for importing more pulses and oilseeds. It may also affect the millet distribution through the public distribution system. The main challenges in rainfed agriculture are drought and water stress. Efficient water management alone can solve the problems in the low rainfall areas *eg* protective irrigation, check dams. This may in turn, increase ‘farmers’ income of small and marginal farmers.

Dr. M. Madhu, Director, ICAR IISWC Dehradun presented paper entitled “**Water management for enhancing water productivity in hill region**”. The major challenges in hill areas is Farm size, High slopes in these areas are causing runoff and erosion, High capital investment is involved in these areas for creation of water source. Augmenting water supply in these areas can be done through watershed, which include Participatory gravity flow water conveyance system for irrigation, DBIS (Division based irrigation system) and water harvesting through silpaulin lined farm pond, harvesting through subsurface flow in foothills, water harvest through earthen dams (Shivalik hills), IFS model for multiple uses of water (Northwestern Himalayas), spring rejuvenation for

greater water availability in perennial streams, gravity-fed micro-irrigation in Punjab, rain gun or sprinklers in Nilgiris. It can be concluded that conservation measures should be location-specific. Micro-irrigation systems should be integrated with water harvesting. Water should be used for sustainable agriculture.

B. Sreenivasulu, Associate Dean, College of Horticulture, Anantharajupeta, Dr. Y. S.R. Horticultural University, Andhra Pradesh delivered a lecture on **Innovative approaches for enhancing water productivity in dry land horticultural crops** and said that drylands are identified by the erratic rainfall, degraded lands, low groundwater and extreme temperatures. In these area farmers are mostly belonging to the small and marginal group. The main constraints of dryland areas are extremely low and erratic precipitation, extremes of diurnal and annual temperatures, low soil moisture, low humidity and high evapotranspiration etc. In these areas, water absorption can be enhanced by three methods: plant level, field level, and protected cultivation. The cultural and agronomic practices that can be followed to enhance water productivity in dryland areas are optimum time of planting, planting methods (Raised beds), spacing, mulching, weeding, method of Irrigation systems.

1.3 Panel Discussion on enhancing water productivity in rainfed ecosystem

The panel discussion was organized to discuss and resolve the approaches for enhancing water productivity in rainfed ecosystem. The Panel was moderated by Dr. V. Praveen Rao as chairman and the panelist were B. Venkatewarlu, Dr. S. Bhaskar, ADG, ICAR, Dr. T. Janakiram, Dr. Sunil, Dr. Gorantiwa, Dr. V.K. Singh and Babita Singh. The Panel discussion was conveyed by Dr. G. Ravindra Chary. In the background of deliberation in the national workshop, the deliberation and discussions were held. Dr. Chary presented the brief and panelist placed the opinion and finally the discussion concluded that water is more critical in agriculture which will decline as the demand from other sector will increase but the challenge to produce more for growing population in the scenario of climate change. The rainfed are has to contribute more in coming year by effective conservation of water and efficient utilization through precision irrigation. The dryland ecosystem technology and avoid the risk through various measure.

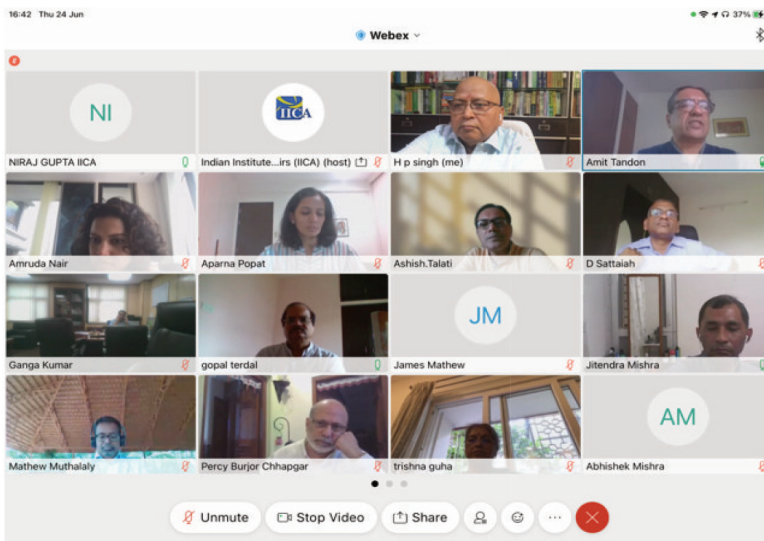
2. Participation in Conference, Meetings and Visits

2.1. On line lectures-Since, after incidence of COVID 19, the life has changed, webinar and online meetings have become a new Normal except for support to Global conference at Hyderabad all the workshops and conferences were deferred and webinars were participated and collaborated. More than 20 webinars were attended and keynote addresses were delivered.



2.2 Participation in Webinar

Dr. Singh participated in a webinar organized on 24th June, 2021 and delivered his lecture. He said how horticulture is contributing to national economy, what are the current challenges and how to address it. He said that The potential of perennial fruit and plantation crops for higher carbon sequestration provides an opportunity to be a sink for increased carbon dioxide and, additionally, opportunity for soil carbon sequestration. Interior and exterior landscape gardening has proven benefit in reducing carbon concentration.

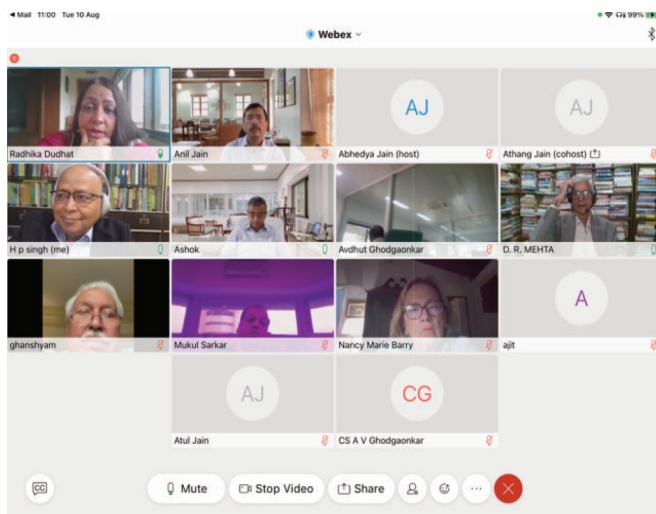


Taking stock of current knowledge about the effect of climate variables and their synthesis for new knowledge in relation to climate change is imperative for adaptive strategies. It can be said that well planned strategies based on knowledge and technology could convert the threat into the opportunity, provided we work in mission mode integrating all the efforts together, addressing the issues concurrently involving all the stakeholders. The projected growth development is happening with innovative models of technology and its adoption, and the targeted production is achievable, but, not in usual mode of approach. The mission approach, which was envisaged to address all the issues in links of the chain from production to consumption in integrated manner has proved to be more successful in achieving the goals. However, there are concerns about competitiveness, which calls for efficiency in all the activities, starting from conceptualisation to production, post-harvest and cold chain management, transportation, marketing and brand management till it reaches to consumers. This calls for value chain development and management to benefit all the players in the chain and provide the produce to the consumer as per their requirement

2.3 New Paradigm in Horticulture - On 3rd August, 2021, Dr. Singh delivered his lecture organised by Brahma Singh, BSHF, New Delhi, coordinated by Dr. Pritam Kalia, former Head, IARI and Dr. S. Rajan, former Director, CISH, Lucknow. He provided steps wise progress in the development of horticulture, which is said to be in 5

The image is a promotional poster for an event titled '3H: Horticulture for Health and Happiness'. At the top, it features logos for '50th Anniversary Horticulture', 'BSHF' (Brahma Singh Foundation for Horticulture), and 'FEDERATION OF FRUITS AND VEGETABLES SOCIETY'. The event is presented by BSHF and sponsored by Syngenta and Patanjali. It is part of the 'TALK-9' series. The theme is 'Horticulture for food, nutrition, and livelihood'. The date is '03 AUGUST 2021' and the time is '7 PM ONWARDS'. The speaker is 'Dr. H.P Singh', Chairman of the Federation of Horticulture Associations of India (CHAI). Below the speaker's name are three co-organizers: Dr. Brahma Singh (Organizer), Dr. Shailendra Rajan (Co-Organizer), and Dr. Pritam Kalia (Co-Organizer). At the bottom, there is a registration link: 'https://forms.gle/wTY5jvXVTYupXdND6', a registration fee of Rs. 500/- (Free for students), and social media handles for BSHF, Nduat Masti, and Nduat Masti. A 'WATCH LIVE' button is also present.

Phases. The current phase of Development is the technology led moving towards digitalisation and automation. He also stressed upon various emerging issues like declining land, declining water and challenge of climate change and said that the technologies are available to produce more with less land and less water and can adopt to the climate change. However this will need continued research and investment for the



adoption of technologies. He also stressed on cultivars and technology to achieve the results.

2.4 Participation in International Conference - Dr. Singh participated in the international Conference, on 5th august, 2021, The conference was organised by Floriculture Today to commemorate the International year of Fruits and vegetable, announced by United Nation to create awareness about its medicinal and therapeutic values and its impact on human

health.. During the conference the Chairman CHAI, Dr H P Singh was conferred life time achievement award by the organisers for his exceptionally outstanding lifetime contributions to horticulture and providing leadership of par excellence leading to Golden Revolution. He also delivered a lecture stressing upon technological changes to addresses the emerging challenges in horticulture, a prime mover of economy in the country.





2.5 Visit to CPRI Shimla and DMR, Solan -Dr. Singh visited CPRI Shimla on 15 and 16 August to Chair the meeting for evaluation and promotion of scientists. After meeting, Dr Singh interacted on various aspect of potato including aeroponics system of seed production. On his back Journey to Delhi he visited DMR, Solan on 17th August, 2021 to see the development, identify the technologies, which can be further taken up by the farmers. He had interacted with the Director, Dr Sharma and all the staff and visited all the facilities available at their institute. The centre has made an excellent progress in developing new cultivar and adoption of diversified mushroom. Work on composting, media and seed production is appreciable. The Directorate is providing an excellent support to Mushroom growers across the country,

2.6 Visit to Centre of Excellence, Hyderabad -Green House technology coupled with vertical production system is emerging technology. The Department of Horticulture has developed a Centre of Excellence to demonstrate the technologies and train the entrepreneur and farmer. Dr Singh along with the team visited the centre on 19 September, 2021. The centre of excellence farm of department of horticulture has demonstration of green house cultivation and vertical growing of leafy vegetable. They are advocating for terrace gardening. The centre is producing the planting



material for distribution to farmers, The centre is excellently maintained and is self sufficient in managing day today expenditure.

2.7 Visit to Fruit Research Station, Sangareddy, A.P. - Dr. H.P. Singh visited fruits research centre, Sangareddy on 20th September, to see various activities. He was explained the activities of Regional Station, especially the work done on Mango, Guava and Sapota. This centre has done an excellent work in development of new cultivars and technologies of Mango and Guava. Thethecentre has AICRP of fruits and is conducting various trial. While visiting farm it was observed that the continue to propagate though old technique and were advised to adopt new technologies University campus was also visited which is in process of development. Drsingh also visited centre of excellence for fruits which has demonstrated high density planting in fruit production. The centre has large scale production of quality planting material.



2.8 Visit to College of Horticulture, Hyderabad - Dr. Singh visited college of horticulture, Hyderabad on 20th September, 2021 and interacted with students of horticulture. He provided a guidance to the students to improve their competitiveness. He stressed on personality development with skill and leadership. He suggested for group discussion on the specific topic. He also interacted with the teachers and explained to them, how to become an excellent teacher. They also discussed the various facet of horticulture. Drsingh briefly explained how the production has increased and is maintaining a growth of 6 present. He also talked about emerging technologies and challenges to feed growing population with declining land and water in the scenario of climate change. However the challenges could be converted in opportunity through technology and well planned strategies.



2.9 Visit to Shimla, Solan and Mandi, Himachal Pradesh - On 18th October, 2021, Dr. Singh visited at Shimla and had interactions with the department of horticulture, especially for the development of subtropical horticulture. On 15th November, 2021, Dr. Singh along with team visited in Mandi District and evaluated the demonstration plots and interacted with the farmers regarding the cultivation of Guava, Pomegranate, Litchi and Sweet Orange. He advised to them, how to improve the productivity and emphasised on Effective Nutrients Water Management. On 28th Nov. 2021 Dr Singh visited Solan to see the activities on temperate horticulture fruits, especially Kiwi fruits, persimmon and plum etc. During the visit, he also visited KVK and Research Station, Chahal.



2.10 Visit to Integrated Farm - On 29th November, 2021, Dr Singh visited integrated farming system in Pusa, wherein horticultural crops are grown and fish is the one of system. He also participated in seedling the fish pond.



2.11 Visit to Jain Irrigation Systems Limited, Jalgaon - On 9th, 10th& 11th December, 2021, Dr Singh visited at Jain Irrigation Systems Limited. He had the meeting with officers and also visited the farmers field to interact for the production of various nursery plant, especially citrus and provided the guidance for improving the quality.



2.12 Participation in Internatinal Conference, IIVR, Varanasi - On 15th December, 2021, DrSingh participated in international conference on Vegetable and chaired a technical session. This conference was organised in

hybrid mode, both physical and on-line the conference was participated by the people from across the country and abroad. In the conference various issues of vegetable production was discussed and it was concluded that good cultivates and production technology are essential part for the successful production of veg. Therefore intensive research must continue to address the issues related to vegetables. Cultivars and production technology.

2.13 Visit to CISH, Lucknow - On 2nd December, 2021, Dr. Singh along with Dr. A.K. Johri visited Central Institute of Subtropical Horticulture, Lucknow. They participated in awarded function of farmers. Dr Singh was the chief Guest of the function and conferred the award on selected candidature. He delivered a lecture for adoption of improved technologies and emphasised on use of new technologies to improve the farm



income. Then he visited nursery and vertical production system developed at the institute. He appreciated the efforts. Dr Singh also saw the plant production system of mango and guava. Then he proceeded to Malihabadi to evaluate the private guava nursery for supply of plants. They are producing large scale plants by enhancing. They are in position to supply the plants in bulk.

2.14 Visit to CSAUA&T, Kanpur - Dr. Singh also attended 27th December, 2021 convocation of Chandra Shekhar Azad University of Agriculture & Technology, Kanpur. He convened a meeting regarding forth coming conference to be organised in May, 28-31, by ASM Foundation. All the aspect in meeting was discussed. The vice chancellor assured of all the assistance in successful organisation of the conference, In evening, Dr Singh delivered a lecture on innovative approaches for development of horticulture, and while tracing the development process emphasised on search for new gene and better technologies. He also talked on nano technology foe enhancing the efficiency of resources.



2.15 Participation Pre-Budget Meeting - Dr. Singh attended Pre-Budget Meeting held on 2nd Feb., 2022 and provided his opinion on the budget this meeting was organised on-line by CNRI. He put his view point and expressed the need for working in mission mode which provides better outcome in terms of deliverables.

2.16 visit to Nasik and Pune-Dr. Singh visited grapes farmers field in Nasik on 18th Feb., 2022 and had a discussion regarding the various facets of grapes production and marketing, The farmers expressed their happiness regarding the support from NRC on grapes, discussed regarding a new problem, which is coming in the grapes i.e. cracking, which is affecting a marketing of the fruits, then on the same day, he also visited Siyadri Farm at Nasik to discuss the marketing of fruits and vegetables and also use of block chain technology for effectively managing and delivering the product. Sahyadriyarmers Producer Company Ltd., Nasik, headed by Mr. Vilas Shinde.(M. Tech Agriculture Engg.) as CEO & Managing Director, who hails from a small village Adgaon, Near Nashik. After completion of post-graduation, MrShinde experimented various agriculture and allied activities, and having observed and witnessed the critical challenges of agri- business closely, he initiated the formation of small farmers' group of 10 farmers, to take up grape exports in 2004. In 2010, he decided to constitutionalise grape exporting activity into a farmer community owned



model and thus Sahyadri Farmers Producer Company was born with a vision to bring sustainability to farmers' income and provide best quality produce to consumers. To achieve the goal, the transparency has been brought across the value chains which ensures and maintains radically fair values throughout all the transactions. MrShinde believe that, scaling up cannot happen if short-term gains are focused, thus the company has long term gains for sustainability. To achieve the goals,

Mr Vilas has been striving to bring efficiency and transparency across all relevant entities of the value chains, and also integrating commodity-specific value chains, with the help of technology interventions. In order to bring trust to their initiatives, Sahyadri is also pioneering Blockchain-powered solutions to take the fair practices to another level and keep track on traceability. Mr. Shinde is pioneering as MD of Sahyadri Farmers Producer Co. Ltd. and has exhibited a successful farmer owned & operated value chain model of the fruits & vegetables, grown by the Small & marginal farmers in Nashik, making their farming profitable & sustainable. A farm to fork integrated model, focusing productivity, quality, cost reduction, finance, post-harvest, logistics and marketing has helped to enhance efficiency at all the levels in the value chains and ultimately boosting farmer's income. The company has consolidated its position as one of the leading fresh fruits and vegetables exporter and processor, and is a leading grape exporter from India for the last 5 years, with export of 1500 container grape to Europe, Russia and Middle East. SFPCL is also one of the largest tomato processors in India, manufacturing Kissan ketchup. Looking at the need for the direct consumer linkage for the Indian farmers, SFPCL has ventured into its own retail chain for fruits, vegetables and processed products. Simultaneously, SFPCL is expanding its footprint in the B2B sale of fruits and vegetables across India. Under the leadership of Mr. Vilas, SFPCL is connected to more than 15000 farmers & 29960 acres + area under various crops and aims to reach 25000 + small & marginal farmers & over 50000 acres area in the coming period. In recognition of the company, MrShinde is contributing as member in Central Advisory Committee Member of Food Safety and Standards Authority of India (FSSAI) - (Ministry of Health & Family Welfare, Government of India.) State Agriculture Export Policy - Department of Co-Operation, Marketing and Textiles, Maharashtra.



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2.17 RAC of DOG and visit to Storage Structure

On 20th February, 2022, Dr. Singh visited storage and processing unit of Onion, after RAC meeting at DOGR as he was informed that the storage structure has been made in their collaboration. The Unit Is highly scientific and commercially viable. This has Capacity of 5000 MT and has been prepared under the direction and supervision of Directorate of Onion and Garlic, long discussion was also held regarding Enhancing Storage of Onion.

2.18 RAC of DFR, Pune and Field Visit

on 21st February, 2022 Dr Singh chaired a Meeting of RAC, of IIFR, Directorate of Floricultural Research, Pune. The projects were presented, discussed and approved with suggestions, The team subsequently visited the field to see various experiments. The conditions field was excellent.



3. The 10th Annual General Council Meeting (AGCM) of CHAI

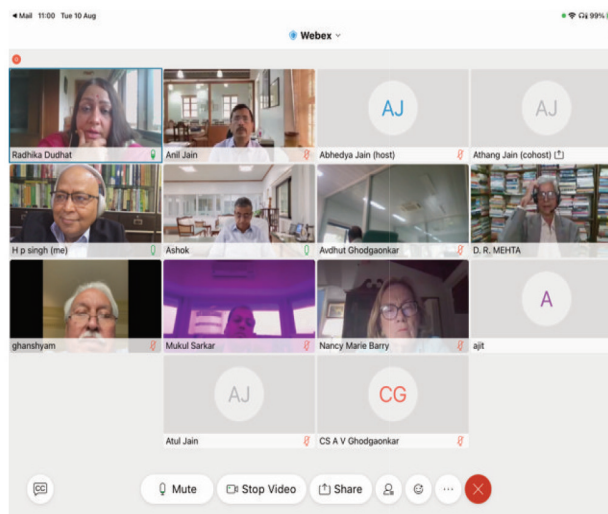
To review the technical and financial progress the Board of Directors meets as per the needs, at least 4 times in a year. Annual General Council Meetings is held once in a year on 16th September, 2021. Tenth Annual General Council Meeting (AGCM) of CHAI was held at 19.00 P.M. on 16th September, 2021 at PJTSAU, Rajendranagar, Telangana, to review the progress and develop future strategic plan of activities to full-fill the objectives stipulated for the furtherance of horticulture / Agriculture. **Shri S.K. Pattanayak**, Former Secretary, MoA&FW, New Delhi, Patron CHAI was the Chief Guest of the AGCM. The meeting started with the welcome of Chief Guest and distinguished Fellow by **Dr H. Chowdhary**, PS, IARI, New Delhi. General Secretary, CHAI and **Dr. Vishal Nath**, OSD, IARI, Hazaribagh, Jharkhand. In the meeting Dr H P Singh presented the activities of CHAI. Dr H P Singh, spoke in details the activities of the CHAI during the year and also gave the details of financial position, informing that the CHAI has FD of Rs 90 lakh. He also gave a brief account of proposed activities in the year 2020-21. Introductory remarks of the Chairman was followed by items on the Agenda and suggestions from the various CHAI's Fellows. The progress made and financial position of the CHAI was well appreciated. Commendable activities done by the CHAI under the chairmanship Dr Singh was placed on record with high appreciations. Many of the fellows, who had been elevated to the higher positions in their career were felicitous by offering shawl and a certificate of appreciation. Thereafter, various awards and Fellowships were conferred for the year 2021, to all the selected nominations. **Shri S.K. Pattanayak**, Patron and Chief Guest in his remarks congratulated all the Awardee and said that the CHAI doing excellent work under the chairmanship of Dr H P Singh, who is committed and dedicated for the furtherance of horticulture and has created this organisation which has grown to an stature of International organisation. He said that activities and financial outlook of the CHAI is excellent . Thus the Fellows have imposed the faith in him and have endorsed the Chairman may take all the activities and take decision in the matter as he deem it fit. He also talked about plant health management in horticulture. In

concluding remarks Dr Singh thanked the Chief Guest for his benign presence and appreciating the activities of CHAI. He also thank all the Fellows for their support and initiatives, He thanked Dr H. Chowdhary and Dr. Vishal Nath. Briefly he brought the attention to the growth of horticulture and challenges and stressed on innovative technology to meet the challenges. Dr. Vishal Nath presented vote of thanks and declared the closure of AGCM.

4. Meetings of Board of Directors and Other Meetings

5.1 Meeting of Board of Directors of CHAI was held every quarter and activities were discussed and approvals were accorded. During the last meeting candidature selected for conferment of various awards were approved, The Board was informed about the support to conference and workshop

2.5. Dr. H.P. Singh attended a board meeting of Jain Irrigation Systems Limited held in each quarter and provided his inputs in the all the meetings. The Company was advised on the various aspects on horticulture, and emphasis was given on expansion of activities in the production of quality planting material and seeds. He also attended the Board meeting of Vindyachal Agro physically. In the August meeting was held in Varanasi after visit of the farm. The activities at farm is not satisfactory and need critical analysis for its continuance.



5. Conferment of Awards and Fellowships of CHAI- 2022

Honoured Fellow, Honorary Fellow Award , Life Time Achievement Award and Life Time recognition Award were conferred during inaugural session by the Chief Guest. The Award of Confederation of Horticulture Associations of India (CHAI) was announced by Dr. H.P. Singh, Chairman, CHAI, who also gave a brief outline of CHAI and said that the CHAI is committed to the furtherance of horticulture and agriculture through activities integrating scientists, Institutions and farmers. It recognises the contribution of individual and organisation by conferring awards. He read citation of awardees and requested the Chief Guest to confer the awards to selected nomination. Selected nominations were conferred the awards by the Chief Guest, Dr S K Pattanayak, Former Secretary to Government of India and dignitaries on dais. During the year 2020-2021, **CHAI-Honoured Fellow Award** was conferred on, which recognises the exceptionally outstanding contribution and leadership of par excellence were conferred on **DrRita Sharma, IAS**, Former Secretary to Gol., MHRD, (absentia) and **DrShailendra Joshi, IAS(Retd)**, Former Chief Secretary, Government of Telangana. **CHAI- Honourary Fellow Awards** were conferred on **Dr. ChindiVasudevappa, VC**,

NNIFTEM, Sonapat, Haryana; **Dr. Ajoy Kumar Singh**, VC, BAU, Sabour, Bhagalpur (Absentia) , Bihar, **Dr. TejPartap**, VC, G.B.P.U. A. & T, Pantnagar, Uttarakhand, **Dr. Ajeet Kumar Karnatak**, VC, VCSGUUH&F, Bharsar, Pauri Garhwal. **Prof. Arvind Kumar**, VC, RLBCAU, Gwalior Road, Jhansi, U.P, (Absentia), **Prof. (Dr. Nazeer Ahmed**, Former Vice-chancellor, SKUAST, Srinagar (Absentia), **Dr. D.R. Singh**, Vice-Chancellor, (CSAUA&T), Kanpur, **Dr. S.D. Sawant**, Vice-Chancellor, BSKKV, Dapoli, **Dr. Arvind Kumar**, DDG (Research), ICRISAT, Hyderabad, **Dr. B N S Murthy**, Director, IIHR, Bangalore, **Mr. Haokholet Kipgen**, Former Minister, Govt. of Manipur, Senapati, Manipur and **Dr. R C Srivastava**, Vice-Chancellor, DRPCAU, Pusa, Bihar for their contributions and providing leadership of par excellence. The **CHAI - Life Time Achievements Award** was conferred on **Dr. S B Dandin**, Former-VC, UHS, Bagalkot (in absentia) and **Dr. Pallem Chowdappa**, VC, BES & TIU, Anantapur, A.P. in recognition of life time contributions and leadership of par excellence. **Life Time Recognition Award** was conferred on **Dr. S K Chakrabarti**, VC, UBKV, West Bengal and **Dr. Chiranjeevi Chaudhary**, for their life time contribution and delivery of results.

Others awards of CHAI were conferred in the AGCM meeting, where Dr S K pattanayak was the chief guest.

CHAI Achievers' Award-2021

Dr. D.R. Singh, Vice Chancellor, CSAUA&T, Kanpur, U.P.

Dr. Bijendra Singh, Vice Chancellor, ANDUA&T, Kumarganj, Ayodhya (Absentia)

Dr. S K Chakrabarti, Vice Chancellor, UBKV, Cooch Behar, West Bengal (Absentia)

Prof. B S Mahapatra, Vice Chancellor, BCKV, West Bengal (Absentia)

Dr. S.D. Sawant, Vice Chancellor, DrBSKKV, Dapoli, Ratnagiri,

Dr. Narendra Singh Rathore, Vice Chancellor, MPUA&T, Udaipur (Absentia)

Dr. P. Chowdappa, Vice Chancellor, BES&TIU, Anantapur, A.P.

Dr. T. Jankiram, VC, DRYSRHU, Venkataramannagudem, West Godavari

1. CHAI-Dr. R.S. Paroda Award

Dr. Harshawardhan Choudhary, PS, DVS, ICAR-IARI, New Delhi

Dr. Sanjay Sahay, Associate. Prof.-cum-Senior Scientist, BAU, Sabour, Bihar (Absentia)

2. CHAI-Dr. B.H. Jain Award

Dr. V. VSadamate, Agril. Extn. Spc. & Former Adv. Agri, PC, Gol., New Delhi

Dr. Soman, Sr. VP, Jain Irrigation Systems Ltd, Jalgaon, Maharashtra

3. CHAI-Ramnandan Babu Award

Shri Dharmhari Prasad Narain Singh, Varanasi, U.P. (Absentia)

Shri K. Ravi Kiran, Progressive farmer, Guntur, Andhra Pradesh

4. CHAI-Appreciation Award

Dr. Anitha Karun, Director (In-charge), CPCRI, Kasargod, Kerala (Absentia)

Dr. R. Thangavelu, NRC for Banana, Tirichirapalli, Tamil Nadu

Dr. Jai Singh Parihar, P.O. Bopal, Ahmedabad

Dr. Major Singh, Director, DOGR, Rajgurunagar, Pune, Maharashtra

5. CHAI-JISL Fellowship Award

Dr. K. Murlidharan, PS&Head, CPCRI, Kasaragod, Kerala (Absentia)

Dr. Pramod Kumar Gupta, Joint Director, NHRDF, Pune, Nasik. (Absentia)

Dr. Awani Kumar Singh, PS (Veg./Hort. Sci.), CPCT, IARI, Pusa, New Delhi

Dr. Dinesh Kumar, PS (H), ICAR-CCRI, Nagpur, Maharashtra

Dr. NighatMushtaq, SKUAST-K, Srinagar (Absentia)

Dr. Suchismita Jena, ASPEE, NAU, Navsari, Gujarat

6. CHAI-Dr. Kriti Singh Best Paper Award-2020 & 2021

Dinesh Kumar, M.S. Ladaniya, ManjuGurjar, Sachin Mendke and Sunil Kumar, *ICAR-Central Citrus Research Institute, Nagpur*

Sawargaonkar S.L., Singh A.K., Rathia G.R., Painkara S.K., Tirkery P., Sharma R.N., Sharon A., and Krishnamurthy K.S. AICRP on Spices, CARS, Raigarh, IGKV, Raipur

7. CHAI-Institutional Fellow Award-2020 & 2021

1. NIFTEM, Sonapat, Haryana

2. Bihar Agricultural University, Sabour, Bhagalpur, Bihar (Absentia)

3. Swami Vivekanand Group of Institutes (SVGSI), Mohali, Punjab (Absentia)

4. GBPUA&T, Pantnagar, Uttarakhand

5. VCSGUUH&F, Bharsar, PauriGarhwal, Uttarakhand

6. RLBCAU, Jhansi, U.P. (Absentia)

7. SKUAST, J&K (Absentia)

8. CSAUA&T, Kanpur, Uttar Pradesh

9. DBSKKV, Dapoli, Ratnagiri, Maharashtra

10. FEEDS, Hengbung Village, Senapati District, Manipur

11. DRPCAU, Pusa, Bihar

8. Conferment of Fellow of CHAI-2020 & 2021

Fellow of CHAI 2020

Dr. Manish Das PS (Plant Physiology), ICAR, New Delhi (Absentia)
Mrs. Malarvizhi Manoharan, Idukki (Dist.), Kerala (Absentia)
Dr. Chandeshwar Tiwari DE, VCSGUUHF, Bharsar, Pauri Garhwal, Uttarakhand
Sh. Ashwani Garg, Chairman, SVIET, Chandigarh, Punjab (Absentia)
Sh. Ashok Kumar Garg, President, SVIET, Chandigarh, Punjab (Absentia)
Dr. G. Byju, SBI, Coimbatore, Tamil Nadu (Absentia)

Fellow of CHAI 2021

Smt. Anita Devi, Chandi, Nalanda, Bihar
Dr. Sanjay Sahay, Chairman, BAC, BAU, Sabour, Bihar (Absentia)
Dr (Mrs) Kumari Rashmi, BAC, BAU, Sabour, Bhagalpur, Bihar (Absentia)
Dr. Vijay Mahajan, DOGR, Rajgurunagar, Pune, Maharashtra
Dr. Ommala D. Kuchanwar, Professor, CoA, Nagpur, Maharashtra (Absentia)
Prof. Indra Mani, Head, DAE, IARI, Pusa, New Delhi
Dr Reena Nair, Assistant Professor, JNKVV Jabalpur, Madhya Pradesh (Absentia)
Dr. R. Jagadeeshwar, DR, PJTSAU, Hyderabad,
Prof. Anitha Vodur, PG studies, PJTSAU, Hyderabad,
Dr. R V S K. Reddy, DR, Dr.YSRHU, Venkataramannagudem,
Dr Kumari Sapna, Associate Professor, DRPCAUI, Pusa, Biharool
Dr. N V Singh, Senior Scientist, ICAR-NRC on POMEGRANATE, Solapur, Maharashtra
Prof. Mohammad Feza Ahmad, DRPCAUI, BAU, Sabour, Bihar (Absentia)
Dr. Sangeeta Kumari, BAU, Sabour, Campus Patna, Bihar (Absentia)
Dr. S K Dwivedi, Director, DRDO, New Delhi
Dr Brajesh Singh, PS and Head, CPRI, Shimla
Dr. L. Pugalandhi, Dean, (Hort) TNAU, Coimbatore, TN
Dr Jagesh Kumar Tiwari, Senior Scientist, CPRI, Shimla
Dr. Rajesh Kumar Singh, CPRI, Shimla

All the process for selection of nomination for Conferment of various award has been done and has been published in the book CHAI-Award and Fellowship? We wish to congratulate all the Awardee of the year 2022.



6. Publications of CHAI

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 on the request of fellows 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 considers 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. 10 volumes of the journal up to 2021 has been published and circulated. Publication of volume 11 is being processed. We hope to release the Journal volume 11, which an special issue devoted to 75 years of Indian Horticulture to Commemorate 75 years of Independence.

6.2 Yearbook of CHAI-2021

The year book of CHAI, which contains, a brief bio-data, mailing address of the fellows and awardees, information about the CHAI, guidelines for publication of an article in IJH and nomination for 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 Year Book for 2022 is in the process of printing.

6.3 CHAI-Awards and Fellowships

This book contains citation of all the Awardee in different categories. Details of recipient of various awards in different categories, Institutional Fellow and Fellow of CHAI are provided. Details of different Awardees in previous years are also provided for reference. The book contains the details about the CHAI.

6.4 Annual Report of CHAI

The annual report for the year 2021-22 has been prepared. The report contains a word from the chair person, Executive summary, about the CHAI, conference supported and organised, participation in conferences, Directors meeting and other meetings, Conferment of Award and Fellowships, was also printed .

6.5 Proceeding of the Conferences and Workshops

The Chairman, CHAI, finalised and helped in the publication of the proceedings of Global Conference held at PJTSAU, Hyderabad 16-19 September. The proceedings has been printed and distributed.

7. Guidance and Advice for the Development of Horticulture

Dr. Singh, Chairman, CHAI, participated, as a chairperson in a workshop, conducted b explained about mission mode approach in horticulture, which has impacted horticulture development and suggested for the adoption of improved technologies. He also visited the field of research stations, which has achieved the excellence. Farmers' field was also visited.

8. Balance Sheet of CHAI**CONFEDERATION OF HORTICULTURE ASSOCIATION OF INDIA**

249, KARGIL COLONY, DWARKA, DELHI-110075

CIN No.U01403DL2010NPL211341

Balance Sheet for the Year Ended 31-3-2021

Particulars	Note No.	Figures as at the end of current reporting period	Figures as at the end of previous reporting period Amount
1	2	3	4
1. EQUITY AND LIABILITIES			
(1) Shareholders' funds			
(a) Share capital	1	500,000.00	500,000.00
(b) Reserves and surplus	2	76,89,530.09	75,07,783.33
(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)		-	-
(c) Other Long term liabilities		-	-
(d) Long-term provisions		-	-
(4) Current liabilities			
(a) Short-term borrowings	3	-	-
(b) Trade payables	4	7,68,903.00	4,41,125.00
(c) Other current liabilities	5	9,54,417.57	7,53,674.00
(d) Short-term provisions		-	-
TOTAL		99,12,851.00	92,02,582.00
II. ASSETS			
(1) Non-current assets			
(a) Fixed assets			
(i) Tangible assets	6	2,35,652.00	3,29,107.89
(ii) Intangible assets	-	-	-
(iii)Capital work-in-progress		-	-
(iv)Intangible assets under development		-	-

CHAI ANNUAL REPORT 2021-22

(b)Non-current investments	7	87,00,565.00	77,00,565.00
(c)Deferred tax assets (net)	8	47,109.66	36,273.15
(d)Long-term loans and advances		-	-
(e)Other non-current assets		-	-
(2) Current assets			
(a) Current investments		-	-
(b) Inventories		-	-
(c) Trade receivables	9	4,89,600.00	4,89,600.00
(d) Cash and cash equivalents	10	3,39,156.40	5,66,649.69
(e) Short-term loans and advances	11	1,00,768.00	80,386.00
(f) Other current assets		-	-
TOTAL		99,12,851.00	92,02,582.00

See accompanying notes to the Financial . **12** - -
 Statements
 Notes
 In terms of our report attached.

For Krishna Kumar & Associates
 Chartered Accountants
FRN No.005586C

For and on behalf of the Board of Directors

DHIRENDRA KUMAR
M.No.504516
 Partner

HARISH CHAND PRASAD SINGH
DIRECTOR
(DIN NO.-06387125)

AMITA CHANDRA
DIRECTOR
(DIN NO.-02525157)

Place: New Delhi
Date: 23-8-2021

Place: New Delhi
Date: 23-6-2021

CONFEDERATION OF HORTICULTURE ASSOCIATION OF INDIA

249, KARGIL COLONY, DWARKA, DELHI-110075

CIN No. U01403DL2010NPL211341

**Balance Sheet for the Year Ended
31-3-2020**

Particulars	Note No.	Figures as at the end of current reporting period	Figures as at the end of previous reporting period Amount
1	2	3	4
1. EQUITY AND LIABILITIES			
(1) Shareholders' funds			
			(a) Share capital
	1	500,000.00	500,000.00
(b) Reserves and surplus	2	7,507,783.33	7,313,598.47
(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)		-	-
(c) Other Long term liabilities		-	-
(d) Long-term provisions		-	-
(4) Current liabilities			
(a) Short-term borrowings	3	-	5,474.00
(b) Trade payables	4	441,125.00	72,039.00
(c) Other current liabilities	5	753,674.00	452,500.00
(d) Short-term provisions		-	-
TOTAL		9,202,582.00	8,343,611.00
II. ASSETS			
(1) Non-current assets			
(f) Fixed assets			
(v) Tangible assets	6	329,107.88	410,296.13
(vi) Intangible assets		-	-
(vii) Capital work-in-progress		-	-
(viii) Intangible assets under development		-	-
(g) Non-current investments	7	7,700,565.00	6,700,000.00

CHAI ANNUAL REPORT 2021-22

(h) Deferred tax assets (net)	8	36,273.15	18,642.75
(i) Long-term loans and advances		-	-
(j) Other non-current assets		-	-
(2) Current assets			
(a) Current investments		-	-
(b) Inventories		-	-
(c) Trade receivables	9	489,600.00	489,600.00
(d) Cash and cash equivalents	10	566,649.69	390,189.00
(e) Short-term loans and advances	11	80,386.00	334,883.00
(f) Other current assets		-	-
TOTAL		9,202,582.00	8,343,611.00

See accompanying notes to the Financial Statements.	12	- -
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Notes

In terms of our report attached.

For and on behalf of the Board of Directors

FOR Krishna Kumar & Associates

Chartered Accountants

FRN No.005586C

DHIRENDRA KUMAR

M.No.504516

Partner

Place:- NEW DELHI

Date: 10.12.2020

HARISH CHAND PRASAD SINGH

DIRECTOR

(DIN NO.-06387125)

Place:- NEW DELHI

Date: 10.12.2020

AMITA CHANDRA

DIRECTOR

(DIN NO.-02525157)

CONFEDERATION OF HORTICULTURE ASSOCIATION OF INDIA

249, KARGIL COLONY, DWARKA, DELHI-110075

CIN No. U01403DL2010NPL211341

**Balance Sheet for the Year Ended
31-3-2019**

Particulars	Note No.	Figures as at the end of current reporting period	Figures as at the end of previous reporting period Amount
1	2	3	4
1. EQUITY AND LIABILITIES			
(1) Shareholders' funds			
(a) Share capital	1	500,000.00	500,000.00
(b) Reserves and surplus	2	7,313,598.47	6,968,344.30
(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)		-	-
(c) Other Long term liabilities		-	-
(d) Long-term provisions		-	-
(4) Current liabilities			
(a) Short-term borrowings	3	5,474.00	5,474.00
(b) Trade payables	4	72,039.00	95,039.00
(c) Other current liabilities	5	452,500.00	469,500.00
(d) Short-term provisions		-	-
TOTAL		8,343,611.00	8,038,357.00
II. ASSETS			
(1) Non-current assets			
(ix) Tangible assets	6	(k) 410,296.11	Fixed assets 361,762.83
(x) Intangible assets		-	-
(xi) Capital work-in-progress		-	-
(xii) Intangible assets under development		-	-

CHAI ANNUAL REPORT 2021-22

(l) Non-current investments	7	6,700,000.00	6,700,000.00
(m) Deferred tax assets (net)	8	18,642.75	3,008.48
(n) Long-term loans and advances		-	-
(o) Other non-current assets		-	-
(2) Current assets			
(a) Current investments		-	-
(b) Inventories		-	-
(c) Trade receivables	9	489,600.00	147,000.00
(d) Cash and cash equivalents	10	390,189.00	467,804.40
(e) Short-term loans and advances	11	334,883.00	358,781.00
(f) Other current assets		-	-
TOTAL		8,343,611.00	8,038,357.00

See accompanying notes to the Financial Statements.	12	-	-
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Notes

In terms of our report attached.

FOR Krishna Kumar & Associates

Chartered Accountants

FR No.005586C

DHIRENDRA KUMAR

M.No.504516

Partner

HARISH CHAND PRASAD SINGH

DIRECTOR

(DIN NO.-06387125)

AMITA CHANDRA

DIRECTOR

(DIN NO.-02525157)

Place:- NEW DELHI

Date: 30.06.2019

Place:- NEW DELHI

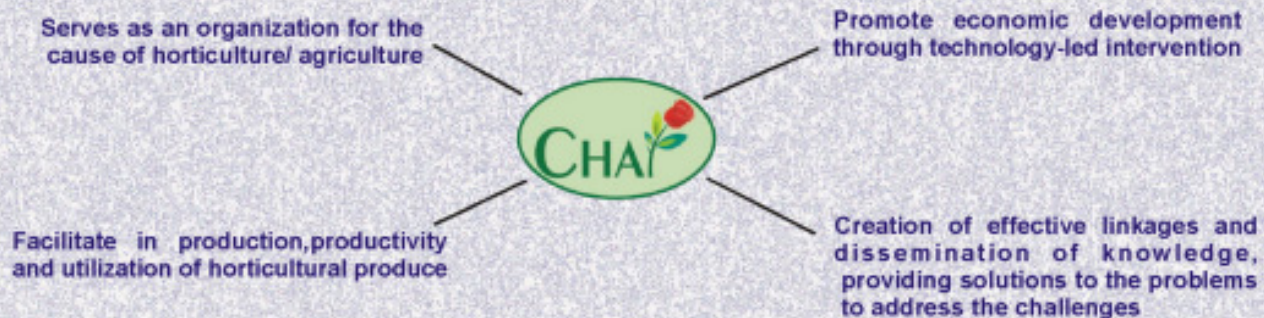
Date: 30.06.2019



CONFEDERATION OF HORTICULTURE ASSOCIATIONS OF INDIA (CHAI)

Let us join with CHAI for the furtherance of Horticulture

Mission: Bringing synergy among different institutions, associations, corporate sector, non profiting organisations, scientists, experts and entrepreneurs to encourage effective participation of all stakeholders for accelerating the economic growth through technological interventions and human resource development.



How to Become Member of CHAI

Membership of the Confederation is open to all who are committed for furtherance of horticulture and membership is available on application to the Confederation and payment of the membership fees. Payment can be made by cash/demand draft/multicity cheque in favor of **Confederation of Horticulture Associations of India** payable at par in New Delhi. The certificate of membership will be in the form of Fellow of CHAI, if approved by the Founder Chairman.

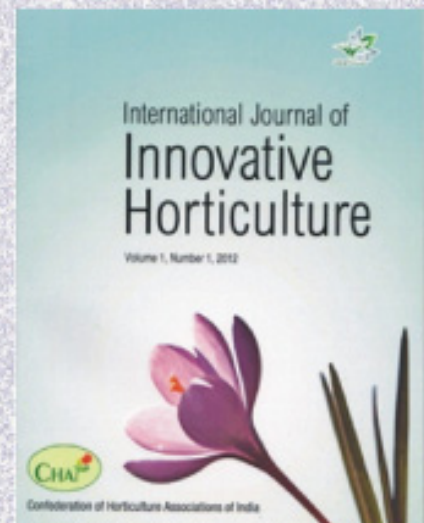
Classes of Membership and Rates

Corporate Member :	Rs1,95,000
Institutional Member:	Rs1,95,000
Association Member :	Rs1,95,000
Individual Member :	Rs 35,000
Foreign Member :	US\$5000

Member shall be privileged to receive **International Journal of Innovative Horticulture** for 15 years free of cost. They shall be eligible to apply for awards of CHAI and also apply for financial assistance for attending international conferences.

Contact:

Founder Chairman
Confederation of Horticulture Associations of India
249, Vijay Veer Awas, Kargil Colony, Sector18-A, Dwarka
New Delhi - 110078, India
Tel : 28085749, Mob: 9871450730
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Website: www.chai.org.in



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