

ICAR-CITH NEWSLETTER



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Horticulture is a fast-growing sector contributing significantly to agricultural GDP of the country and important from nutritional, economic and livelihood point of view. The varied agro climatic conditions of the country had led us to enjoy production and supply of many horticultural crops. The area under horticultural crops is 27.48 million ha with

the production of 334.6 million tons. The agro climatic conditions in most parts of Himalayan hill states which extends from Jammu and Kashmir in north to Arunachal Pradesh in east has a unique and fragile eco-system which is highly suitable for growing number of temperate fruit crops, vegetables and ornamentals. These crops serve as the backbone of region's economy and source of employment. Current Issue of ICAR-CITH, Newsletter 2022 depicts different achievements in research, extension activities, trainings; publications etc organized for the benefit of stakeholders, farmers, researchers by the ICAR-CITH, Srinagar as well as its Regional Stations viz Mukteshwar & Dirang. During this period elite germplasm of temperate horticulture crops was added in all stations. More than 680 cultivars/genotypes in different crops were evaluated for various traits in different crops. Improvement programmes were carried out for addressing the problems existing in different crops. Sufficient quality planting material of elite varieties in various crops was supplied to the growers/ departments/ organizations along with promotion of indigenously developed varieties by the Institute. Technologies for large scale production of rootstocks/ planting was developed and disseminated among the nursery to minimize the import of planting material in future. Similarly, research was also taken up in other aspects like crop production, protection and postharvest during the year and technologies were generated. Presently farmers have adopted many technologies to boost the productivity of their farms. During the year, strong linkages were established with various

organizations/ institutes/departments. The institute is giving its significant efforts to provide awareness of various technologies generated in temperate horticulture crops to stakeholders. The institute organized programs for human resource development. ICAR-CITH is coordinating and regularly organizing training courses, field/crop days, on and off campus trainings, demonstrations, field visits, diagnostic and control measure discussions, supply of quality and elite planting material, publication in local language, radio/TV talks, melas/ exhibition etc. During the year, scientists of Institute published 26 research papers, 3 review papers, 17 book chapters and 11 popular articles/ pamphlets etc. In addition to various appreciations, the scientists of ICAR- CITH, Srinagar received 6 awards during the year. Besides providing need-based information through various social media, scientists of Institute have delivered 24 TV/Radio talks. Institute has increased its reach in NEH region many folds during the year. I extend my best wishes to the scientists and staff members for their well-deserved promotions during 2021.

I hope that the current issue of ICAR-CITH, newsletter reflecting the research, training, extension, development and other activities of the institute and its regional stations will inform the readers about ongoing activities, status, contribution and development of the institute. Feedback and suggestions for further improvement in the institute activities for upliftment of farming community engaged in temperate horticulture will gladly be acknowledged.

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RESEARCH HIGHLIGHTS

ICAR- Central Institute of Temperate Horticulture, Srinagar (J&K) is working on germplasm management, improvement of germplasm, development and dissemination of technologies, human resource development and among farmers for enhancing quality production of temperate horticultural crops in the country. During 2021 Institute developed many varieties/technologies with great impact for improving productivity and quality of temperate fruits and vegetables. ICAR-CITH, Srinagar is National Active Germplasm Site for temperate fruit crops. The germplasm wealth is precious to cater the present and future need of any country. During 2021, 53 germplasm of different fruit and vegetable crops were collected and introduced at ICAR- CITH, Srinagar and about 100 at its regional stations. The evaluation work was also carried out in different crops to screen out the elite genotypes for commercial cultivation. In evaluation of columnar apple cultivars viz. 'Sunlight', 'Moonlight', 'Redlane' and 'Goldlane' for fruit quality traits like TSS, acidity, pH, firmness, ascorbic acid, color parameters and for antioxidant potential through DPPH, FRAP, total phenols, flavonoids and flavonols assays. Sunlight showed maximum fruit weight (170g) and ascorbic acid (8.82%) in addition to its good antioxidant potential and thus showing the promise for its commercialization. During the year, commercially important cvs. Gala Redlum, Super Chief, Red Velox, Golden Delicious Reindeers, Golden Delicious Clone B, Elstar, Jonaprince, Pinnova, and Red Chief were evaluated and based on fruit quality traits Gala Redlum, Red Chief, Super Chief and Red Velox showed good performance. Screening of apple germplasm against major diseases using phenotypic and biochemical approaches, total 203 apple cultivars were screened under field conditions for scab disease incited by *Venturia inaequalis*. On the basis of disease reaction (1-5 scale), 62 cultivars/lines were found resistant (1) as compared to susceptible check Oregon Spur (4). In apricot, 65 varieties/ genotypes were evaluated for various fruit and colour traits and 8 genotypes produced fruits having TSS more than 20⁰B. In evaluation of 34 peach/ nectarine cultivars/ genotypes for initiation of flowering (first flower open); 7 were early (3rd week of March), 26 were mid (4th week of March) and 1 was late (2nd week of April). In strawberry, 90 germplasm were evaluated for initiation of flowering and duration of flowering. Out of 90, 75 genotypes-initiated flowering in 2nd week of April while 15 genotypes initiated in 3rd week of April. The peak flowering was in 2nd week of April in 4, 3rd week in 84 and 4th week in 2 genotypes. The end of flowering was in 3rd week of April in 10 and 4th week of April in 80 genotypes. Among the evaluated, almond selections the nut weight ranged from 1.62 g (CITH A- 22) to 4.29 g (CITH A-15). In walnut 246 genotypes/ varieties were evaluated for various nut and kernel traits. Among all 15 varieties/ genotypes produced nuts having weight more than 20g while the 15 varieties/ genotypes produced kernel weight more than 10g and 20 genotypes produced nuts having kernel percentage more than 55 per cent.

In vegetables, kale, pea, root vegetables and exotic vegetables were maintained and evaluated under field conditions. Fifty-eight genotypes of kale were evaluated against 4 checks. Leaf yield of the germplasm ranged from 111.50 q/ha to 521.50 q/ha, leaf length from 13.88 cm to 27.04 cm and leaf width from 9.53 cm to 22.37 cm. 'NW-Saag-27' expressed highest leaf yield. Among root crops, 3 genotypes of radish, namely, 'CITH-R-5', 'CITH-R-6' and 'Scarlet Globe' were evaluated along with two checks Palam Hriday and 'Japanese White Long'. Root yield of 205.70 q/ha to 378.16 q/ha was observed in the germplasm. In turnip, 18 lines including 3 checks 'Pusa Swarnima', 'Pusa Chandrima' and 'Nigeen-1' were assessed for root yield (q/ha), root length (cm) and root diameter (cm). None of the lines performed statistically superior to best check Pusa Chandrima (357.78 q/ha). Among leafy, exotic and Brassica crops, Chinese cabbage line 'CITH-CC-1' expressed 413.00 q/ha of net head yield. Broccoli line 'CITH-Broccoli-1' gave net head yield of 198.06 q/ha and 'CITH-Cabbage Hybrid-1' gave 346.65 q/ha yield.

Evaluation of germplasm at regional station Mukteshwar and Dirang lead to identification of some promising germplasm lines with potential for commercialization and utilization for further breeding programmes.

Under breeding programme for temperate fruits and nuts six identified apple hybrids were again evaluated for fruit quality traits viz antioxidative and free radical scavenging potential. Studies revealed that superior quality parameters with respect to TSS, acidity, ascorbic acid content, fruit weight and bioassays were obtained in hybrids with respect to their parents. Apple hybrids are being registered through NBPGR for obtaining INGR numbers. Hybrid population developed in apple, pear, almond and walnut is being maintained and grafted/budded on specific rootstocks for further evaluation. In development of CMS lines in onion (*Allium cepa* L.), no morphologically scorable male sterile plants were observed in the flowers of F1 generation grown from crossings between male sterile lines obtained from PAU and promising varieties/ lines at the institute. In a separate crossing programme, bulbs of F2 generation were evaluated for storability before planting them in December, 2021. Brown Spanish when crossed with either MS-1 line or MS-2 line resulted in highest storability in F2 generation.

During 2021, institute has supplied about 24,000 plants of different temperate fruit crops besides the supply of 23,900 scion wood, 267 runners, 6174 plants/ seedlings of flowers, 86.34 kg vegetable seeds, 23,000 vegetable seedlings and 13.5 kg onion seedlings to different stakeholders, vegetable growers & research organization etc. During the year 2021 about 3000 from Srinagar and 1000 grafted plants of walnut from Mukteshwar were provided to Uttarakhand Forest Resource Management Project for establishment of mother orchards as well as for planting in farmers' field under project promotion of walnut in Uttarakhand funded under Japan International Cooperation Agency (JICA)

In nutrient requirement and irrigation scheduling for ap-

ple under high density planting system, initial soil samples were collected according to treatment and analyzed for basic soil quality parameters. In nutrient profiling of Nursery Blocks of the fruit crops of ICAR-CITH, Srinagar, samples were analyzed for pH, electrical conductivity, organic c

Carbon, nitrogen, phosphorous, potassium and micronutrients such as iron, zinc, manganese and copper. The nutrient profiling studies showed that major nutrients such as nitrogen and phosphorous was found deficit in apple, plum and walnut nursery blocks whereas micronutrients like iron and copper levels were below average in the apple and walnut blocks. In standardization of integrated nutrient management of vegetables as intercrop in apple orchard, technology was demonstrated among farmer under MGMG and SCSP scheme at Sunkiya (Nainital) and Odlohar-Simsyari, (Bageshwar) villages during the year with the aim to promote crop diversification for sustainable production and to utilize better space as well as natural resources per unit area without eroding soil health for enhancing production per unit area.

In development of almond based intercropping system involving saffron, different type of varieties having varied growth habit viz. erect, semi erect and spreading type were tried along with sole saffron crop. The highest almond was recorded in erect type followed by semi erect and spreading without any significant effect on flower traits of saffron. Thus saffron-almond is the best combination and the almond crop can give additional returns to growers and will be more beneficial to compensate losses during adverse biotic and abiotic stresses.

In off-season cultivation of onion in Kashmir valley (New Technology), 'Punjab White' was found superior for offseason cultivation of onion in Kashmir valley conditions with marketable bulb yields of 27.89 to 28.81 t/ha and marketable bulb weight of 57.92 to 64.83 g obtained with end July to mid-August planting of bulb sets and harvesting in second fortnight of October to first week of November.

The effect of different concentrations of IBA on rooting of cutting using in soil under naturally ventilated green house at ICAR-CITH RS Dirang, Arunachal Pradesh it was observed that the kiwi cv 'Allison' treated with IBA 4000 ppm has a higher rooting success rate of 54%, whereas the lowest has been recorded case of Hayward 4000 ppm with a success rate of 27.5% rooting. Hence higher conc. of IBA (4000) has been found to produce the highest rooting success rate

In diagnosis and prognosis of apple viruses, detection and quantification of ApMV and ApNMV from different plant parts (spatial) in two cultivars (Oregon Spur and Golden Delicious) of apple plants during different seasons (temporal) for optimization of tissue and time for their rapid and early detection was conducted. During spring season, the ApMV and ApNMV expression was higher in leaves followed by pedicel. During these seasons, both ApMV and ApNMV were detected in leaves in measurable titre using RT-qPCR. Periodic detection of these viruses in different plant parts during all the seasons revealed varied virus titer from one season to

another in the same plant. Studies were also carried out for transmission through budding and understanding the effect of clonal rootstocks x scions (virus infected) interface on mosaic disease of apple. Comparative Transcriptional studies in mosaic infected apple cultivars comparison to asymptomatic cultivar transcriptome analysis was used to identify the gene expression profiles in ApMV and ApNMV infected apple cultivars (Oregon Spur-AIN and Golden Delicious-AP) in comparison to healthy cultivar Red Fuji. Based on GO and KEGG pathway analyses, the difference in response to ApMV/ApNMV between infected and healthy mainly involved transport, photosynthesis, plant-pathogen interaction, protein synthesis, defence against pathogen, cell division, oxidative stress in all three comparisons.

In elucidating the diversity, species spectrum and management of *Alternaria* spp. infecting apple, thirteen fungicides were evaluated under in vitro against *Alternaria* spp. causing leaf spot of Apple. Among different fungicides, Hexaconazole 5EC, Propiconazole 25EC, Fluxapyroxad 250 G/L + Pyraclostrobin 250 G/L SC showed complete inhibition (100%) of the pathogen at all the test doses and minimum by Metalaxyl 4 WP + Mancozeb 64 WP (50%) compared to untreated control. Among the contact fungicides the highest percent inhibition (80%) was found in Ziram 80WP, while as in systemic fungicides highest percent inhibition (100%) was found in Hexaconazole 5EC and Propiconazole 25EC. Among combo products highest percent inhibition (100%) was found in Fluxapyroxad 250 G/L + Pyraclostrobin 250 G/L SC. Besides this, seven different botanicals extracts were evaluated in vitro against *Alternaria* spp. of apple. Among different extracts Oreganum leaf and flower extracts completely inhibited (100%) the growth of *Alternaria* at all test doses compared to untreated control.

In bionomics, modeling and management of sucking pest complex of temperate fruits, to determine the effect of the growth stage of current-year shoots and their location within the tree on the pattern of *A. pomi* incidence, the aphid populations were sampled from apple cv Coe Red Fuji and other standard varieties in high and medium-density orchards. Based on the growth activity, each sampled shoot was categorized as growing, hardening-off, or hardened-off. It was found that the shoots in the growing stage were most susceptible followed by the hardening-off and hardened shoots. To determine the spatial distribution of the green apple aphid, *Aphis pomi* along the apple shoots, the effect of leaf position on the incidence of green apple aphid was significant throughout the season. In the early season, the aphids tend to clump on leaves 1 to 5. The incidence of the aphids is highest at the beginning of infestation (June). By mid-season (July), the aphid incidence declines slightly with the production of a large number of winged adults. The aphid infestation spreads to leaf number 10. By the end of the season (August), the aphid incidence spreads to most of the leaves present, mainly because of the maturation of the growing tip and setting off of the terminal bud.

The storage study on fruits of various pear cultivars (Starkrimson, Red Bartlett and Carmen) was carried out at ambient temperature. Various post-harvest treatments viz. cold shock (CS) or ice-cold water, calcium chloride (CC) and oxalic acid (OA) were given to the fruits of all varieties alongside untreated fruit samples kept as control. During this study, Starkrimson was observed to have the lowest TSS in controlled sample followed by Carmen and Red Bartlett. During the storage period all three varieties showed increase in TSS value which is due to the continuation of conversion of starch into sugars even after harvesting. It was found that samples treated with oxalic acid and calcium chloride had lower rise in TSS, which may be due to the fact that these chemicals retard the ripening rate after harvesting. The decrease in ripening rate is desirable since it extends the shelf-life of the fruit. The firmness of fruits decreased with storage periods with all treatments irrespective of varietal effect. It was observed that cv. Carmen had lowest firmness among the three varieties and effect of oxalic acid and calcium chloride on preserving the firmness of fruit over the storage period was clearly evident.

ICAR-CITH, Srinagar and its Regional Stations are continuously transferring various generated technologies using various extension means for popularization of technologies. During the year, about 26 meetings/events were organized in which an Apple Day was a mega event. ICAR-CITH, Srinagar has organized one 7 days training programme for officers, one five days training programme for departmental personnel and one five days training programme for nursery growers from Himachal Pradesh. Five one day training programmes on walnut propagation were conducted for forest departmental personnel in various nurseries in Uttarakhand. Six student's training/visits, one day programme for farmers of Ladakh, one for farmers of Himachal Pradesh, two programmes for official from Dept. of Horticulture Meghalaya along with one diagnostic visit were conducted. A three days training programme on value added products was conducted for AFWWA and 10 programmes for farmers of Jammu & Kashmir were conducted. Similarly at Regional station Mukteshwar, two programmes for officers/ SMS, 3 farmers visit and 20 different programmes (trainings/ demonstrations etc.) were conducted besides the display of three exhibitions at various occasions. At RS Dirang, one three days training programme was organized for officers and five training programmes of one day duration for farmers and agricultural inputs were provided at four locations. In TSP, 3 programmes were conducted while two programmes were organized under SCSP scheme and inputs were provided to the beneficiaries. IN MGMG, 6 trainings, 6 visits and 4 demonstrations were provided in Uttarakhand. During the year, scientists of Institute published 26 research papers, 3 review papers, 17 book chapters and 11 popular articles/ pamphlets etc. In addition to various appreciations, the scientists of ICAR- CITH, Srinagar received 6 awards during the year. Besides providing need-based information through various social media, scientists of Institute have delivered 24 TV/Radio talks

MEETINGS & EVENTS

Apple Day

Apple Day was organized on 9th September 2021 as part of Azadi Ka Amrit Mahotasav. Shri Narendra Singh Tomar, Hon'ble Union Minister for Agriculture and Farmers Welfare, Government of India was Chief Guest of the function. Sh. Kailash Choudhary & Ms. Shobha Karandlaje (Minister of State for Agriculture and Farmers Welfare), Dr Farooq Khan, Advisor to Hon'ble LG of J&K graced the occasion as Guest of Honour. Dr. A K Singh, Deputy Director General, ICAR, welcomed the guests and highlighted about salient achievements of the institute. Dr. O C Sharma, Director, ICAR-CITH, senior Officers from Department of Agriculture and Cooperation, Govt. of India and Department of Agriculture and Farmers Welfare UT of J&K and other line departments were also present. About 80 farmers and rural youths participated in the programme.



Second Sub-committee of the Parliamentary Official Language Committee inspection

The second sub-committee of the Parliamentary Official Language inspected the progress of work being done in Hindi in the Institute on 16th July, 2021. This inspection program was organized by the convener of the second sub-committee, Hon'ble Prof. Rita Bahuguna Joshi, in which Hon'ble Shri Sushil Kumar Gupta (Member of Parliament), Smt. Ranjanben Dhananjay Bhat, (Member of Parliament) and Shri Durga Prasad Uike, (Member of Parliament) besides Secretary of Parliamentary Committee on Official Language Smt. Manjula Saxena, Under Secretary, Dr. Rameshwar Lal Meena, Section Officer Shri Kamal Swarup, Senior translator Shri Kiran Pal Singh, translator Ms. Geeta and Stenographer Shri Anil Kumar were present. Dr. Om Chand Sharma, Director, while welcoming the Honorable members and officers of the committee, briefed on the mandates and achievements of the institute and introduced all the officers who participated on behalf of the Institute and Council Headquarters. The questions asked by the Hon'ble members were answered satisfactorily and committee expressed satisfaction over the answers given by the institute. The committee showed great interest in knowing about research activities being carried out by the institute.



Research Advisory Committee Meeting

The 17th RAC meeting of ICAR-CITH, Srinagar was held on 28th April, 2021 in virtual mode under the Chairmanship of Dr T. A. More, Former-Vice Chancellor, MPKV, Ra-huri. The RAC members who attended the meeting were Dr R. K. Avasthe, Dr A. T. Sadashiva, Dr Bhardendu Vatsya, Dr V. K. Baranwal, Dr B. K. Pandey, Sh. Desh Kumar Nehru, Dr Desh Beer Singh and Dr. O. C. Sharma. Besides, the Scientists of ICAR- CITH, Srinagar Dr J. I. Mir, Dr W. H. Raja, Dr. Sajad Un Nabi & Dr Mohd Abas Shah and PC & Head, KVK Baramulla and I/C RS Mukteshwar, Dr. Arun Kishore also attended the meeting.



Discussion during RAC Meeting

Institute Research Council Meeting

The 17th IRC Meeting was held on 20th to 21st April, 2021 under the chairmanship of Dr D. B. Singh, Director, ICAR-CITH, Srinagar. All the scientists participated in the meeting by following proper social distance keeping in view the COVID-19 pandemic. Project wise presentations were made by PIs and results/outcomes along with the activities to be taken up next year were discussed in detail. The presentation on Research Projects from Regional Station, Mukteshwar and new scientists who were on proposed training, attended the meeting in virtual mode.



Discussion during IRC Meeting

Institute Management Committee (IMC)

The IMC meeting of ICAR-CITH, Srinagar was held on 27th April, 2021 under the Chairmanship of Dr D. B. Singh, Director ICAR-CITH, Srinagar. The other members who attended the meeting were Dr B. K. Pandey, Dr S. K. Singh, Dr S. M. Sultan, Sh. Desh Kumar Nehru, Dr J. I. Mir, Dr O.

C. Sharma, Dr Manoj Kumar and Sh. Fayaz Ahmad Dar. The detailed discussions were held on various agendas and many agendas were approved.



Discussion during IMC Meeting

Hindi Week

Hindi Week was organized from 14th to 21st September, 2021 after observing Hindi Diwas on 14th September. The pledge to use and promote Hindi was also administered by Director to whole staff members of the institute. During the week, essay writing, translation, poster making, ex tempore and Antakshari were organized in which staff members along with their children participated fervently. Certificates and cash prizes were awarded to winners of the various competitions on 21st September, 2021.



Hindi Week at ICAR-CITH, Srinagar

World No Tobacco Day

World No Tobacco Day was celebrated at ICAR-Central Institute of Temperate Horticulture Srinagar on 31st May, 2021 in which Director Dr O.C Sharma highlighted the health and other risks associated with tobacco use and advocated for effective policies for reducing the consumption of tobacco. This yearly celebration was aimed to raise awareness among the global citizens about the dangers of using tobacco under the theme "Commit to Quit". Finally, No Tobacco pledge was administered by Director to whole staff of the institute.

World Water Day

The World Water Day was celebrated on 22nd March, 2021 during which importance of water in agriculture and rural livelihood was discussed. Interacted with the farming community was made to make them aware about water con-

servation and management aspects. Total 42 participants including staff, students and farmers were present in the programme.



Interaction during WVD

Farmers Scientist interaction on Climate Resilient Agriculture

A programme on Climate Resilient Agriculture was organized on 28th September, 2021 in which total 162 participants participated (80 farmers from Kargil, 32 from Srinagar & staff working at Institute). During the programme interaction was held between farmers and scientists on various aspects of climate change. During the interaction, it stressed that role of different climate resilient varieties are of prime importance.



Participants of FSI on CRA

Vigilance Awareness Week

Vigilance Awareness Week was observed from 26th October to 1st November, 2021. The theme of the Vigilance Week was Independent India @75: Self Reliance with Integrity (स्वतंत्र भारत @ 75: सत्यनिष्ठा से आत्मनिर्भरता). Various programmes were organized to make the staff aware of various practices and measures to fight against the corruption. A Pledge ceremony was held in which all staff members

took pledge. The posters were displayed in different areas of campus for creation of awareness for making vigilant and prosperous India. Pledge and awareness programmes were also organized at Regional Stations.



Pledge during Vigilance Awareness Week

National Unity Day

The National Unity Day/ Rashtriya Ekta Diwas was celebrated on 31st October, 2021. During the events sacrifices of Sardar Vallabhbhai Patel and importance of unity day was highlighted. Pledge was also taken by the staff for their dedication to preserve the unity, integrity and security of Nation. To commemorate the Unity Day a run for unity was also organized at village institute road. National Unity Day/ Rashtriya Ekta Diwas was also celebrated at Regional Stations.



Pledge on National Unity Day

Communal Harmony Campaign Week

The communal harmony campaign week was observed w.e.f. 19th to 25th November, 2021. The week was celebrated with great zeal and zest and all staff members participated with enthusiasm. On 22nd November, volunteer fund raise campaign was also organized for making contribution to "National Foundation for Communal Harmony" in which our staff members come forward for this cause and made their contribution. On 25th November, Sadbhavana pledge

was also taken and Flag Day was celebrated with participation of staff members.



Sadbhavana Pledge

Swachh Bharat Abhiyan

During 2021, number of programmes were organized under the Swachh Bharat Abhiyan at ICAR-CITH, Srinagar and its regional stations. The aim of all the programmes was to spread the message of Mahatma Gandhi Ji to take initiative at individual level in promoting cleaning drives and devote personal time in nation cleaning. On occasion of birth anniversary of Mahatma Gandhi Ji, office cleaning drive was organized at institute and its regional stations in which staff members took part and cleaned their respective chambers as well as common places. On 12th October, 2021, Waste to wealth under “Special National Swachhta Campaign” was observed at the institute. In this program message was conveyed about utilization of farm or kitchen waste into natural resources for farm input. During Swachhta Pakhwada i.e., from 16th to 31st December, 2021, various date wise activities were organized at the institute. The Kisan Diwas was observed on 23rd December, for which officials from state agricultural department along with farmers were present. In this program, total 120 participants participated in the program including farmers and officials.



Activities during Swachh Bharat Abhiyan

EXTENSION & HRD

Seven days programme for officer

A seven days training programme was organized on Enhancing productivity through advanced technical interventions in temperate fruit crops for officers from Department of Horticulture, Himachal Pradesh w.e.f. 1st to 7th December, 2021. Total 30 subject matter specialist (SMS), horticulture

development officers (HDO), horticulture extension officers (HEO) etc participated in the programme. During the programme various lectures on various technologies for enhancing productivity in temperate fruits were delivered followed by practical demonstrations. Some visits to different organizations/ orchards were also organized during the training programme.



Practical exposure on QPM production

Five days training programme

Two five days training programmes were organized on technical skill improvement for enhancing farm output in temperate fruits for supporting staff of Department of Horticulture, Himachal Pradesh and for and nursery growers of Himachal Pradesh w.e.f. 15th to 19th November, 2021 and 13th to 17th December, 2021 respectively. Total 40 participants/ officers/nursery growers participated in the training programme. During the training programme, emphasis was given for improving skill of the trainees on nursery production, high & medium density plantation in temperate fruits. Some visits to different organizations were also organized during the training programme.



Participants of 5 days training programme

Scientist- Farmer Connect Meet

ICAR-CITH, Srinagar with KVK Baramulla organized Scientist- Farmer Connect Meet at Palhallan-Hyderabad (Pattan) - Baramulla on 28th October, 2021. This programme was organized under Kisan Biotech Hub and total 170 farmers (160 women & 10 men) participated in the programme. In this programme, scientists from ICAR-CITH & KVK

Baramulla interacted with the farmers and their questions on various aspects were satisfactorily addressed.



Scientist Farmer Connect Meet

Three days training programme

ICAR-Central Institute of Temperate Horticulture, RS Dirang in collaboration with Department of Horticulture, Government of Arunachal Pradesh organized three days training programme on Technological interventions for higher productivity and quality of temperate fruits in Arunachal Pradesh at Bomdila, West Kameng District w.e.f. 20th to 22nd March, 2021 for the officials/officers from departments including Horticulture, Agriculture and allied sectors. Total 20 officials/officers participated in the 3 days training programme. The participants were made well acquainted with different aspects of temperate fruit production including canopy management, production of quality planting material, management of physiological and micronutrient deficiencies, disease/pest management in fruits and vegetables, profitable kiwi production, vegetable production, value addition of fruits and vegetables.



Activities during training at ArP

Awareness cum training programme on PPV & FRA Act

One day awareness cum training programme was organized at ICAR-CITH, Regional Station, Dirang on 10th February, 2021 to make farmers acquainted with the rights and protection of farmers and varieties respectively. The farmers were made aware regarding importance of the indigenous material and its protection and right of farmers. The process of registration of farmer's varieties was discussed in detail.

Implementation of Tribal Sub Plan (TSP)

For the benefit of tribal farmers, Tribal sub plan was also executed by ICAR-CITH, Srinagar in notified districts and areas under execution in early years. Various programme like trainings, interaction, demonstrations and planting material distribution for enhancing their farm income. ICAR-Central Institute of Temperate Horticulture organized a programme in collaboration with Krishi Vigyan Kendra, Poonch of SKUAST-J for the tribal farmers of district Poonch, Jammu & Kashmir on 27th February, 2021 in which more than 120 farmers participated. A Farmer Scientist Interaction was also organized on this occasion in which the scientists from ICAR-CITH and KVK Poonch replied to various problems faced by the farmers in Horticulture and Agriculture sector. On this occasion, planting material of apple, almond, nectarine and plum, seed kit of vegetables, tool kit consisting of spade, sickle, scissor, rake etc was also distributed among 100 tribal farmers of the district. One day training cum interaction meeting was also organized on 28th February, 2021 at Mohar village of Kotranka area in district Rajouri in which about 60 farmers participated. During the programme various problems faced by the tribal farmers were discussed and addressed. On this occasion, planting material of fruit crops like apple almond etc and a farm tool kit was provided to 50 participating tribal farmers. In addition, planting material was distributed among 178 tribal farmers of Babanagri, Ganderbal on 20th March, 2021. Grafted and budded plants of apple, almond, cherry & peach including seeds of onion, carrot, cabbage, beet root and Swiss chard were distributed for promoting horticulture and improving livelihood of the tribal farmers in the region. Training programme was also organized on Soil Health Management and Plant Protection.



Glimpses of TSP Programme (Training & Planting material/ kit distribution)

Schedule Caste Sub Plan (SCSP)

Schedule Caste Sub Plan (SCSP) was executed by ICAR-CITH, Srinagar at RS Pura area of Jammu Kashmir. One day training programme for SC farmers of Jinder Melhu - RS Pura, Jammu on 2nd March, 2021 in collaboration with Directorate of Extension and KVK Jammu under SKUAST-Jammu was organized. In this programme about 125 farmers including women farmers participated. Tool kits were distributed

among 110 SC farmers. At Uttarakhand, Odlohar-Simsyari village was selected in the Bageshwar district under SCSP and the scheme was implemented in the village during 2021. The basic data/document were collected and verified and total 100 farming families are selected for the benefit. In the village, Swachhata campaign cum Kisan Gosthi on scientific way of planting winter vegetables and waste decomposition awareness programme was organized on 22nd December, 2021 in which total 40 farmers were participated.



Glimpses of SCSP Programme (Training & kit distribution)

Implementation of Mera Gaon Mera Gaurav Programme

ICAR- CITH RS, Mukteshwar has adopted Sunkiya village under Mera Gaon Mera Gaurav. Six trainings, six diagnostic/field visits and four demonstrations in which total more than 100 farmers participated. The farmers of the village were also supported with different technological literatures on temperate fruits and vegetables. Further, 20 mobile based advisories; five FAPs; four swachhata campaigns and waste decomposition awareness programme were organized besides providing the technical support to the farmers of the village as and when approached.



Participants of MGMG programme at Sunkiya village

AWARDS & RECOGNITIONS

Dr Arun Kishor, Scientist-SS (Fruit Science) received Young Scientist Award in the 4th International Confer-

ence on Current Approaches in Agricultural, Animal Husbandry & Allied Sciences for Successful Entrepreneurship (CAAAAHASSE-2021) held from 13th to 15th March, 2021 (virtual) organized by Agro Environmental Development Society (AEDS) Majhra Ghat, Rampur, Uttar Pradesh-244922 India in collaboration with RVSKVV, Gwalior, M.P.

Dr Sovan Debnath, Scientist-SS (Soil Science) received Best poster presentation for paper Assessing Zn induced Fe depletion in processed foods made up of Zn fortified cereal grains' in the National Webinar on "Stewardship of Agrochemicals for upkeeping Environment" organized by the Society for Fertilizers and Environment in collaboration with Bidhan Chandra Krishi Viswavidyalaya from 30th to 31st March, 2021.

Dr Sovan Debnath, Scientist-SS (Soil Science) received Best oral paper presentation for paper entitled Is temperate fruit-based farming implicating soil mining of nutrients in fragile lands of mid-Himalayan ecosystem? in the World Environment Summit 2021 organized by Environment and Social Development Association, New Delhi from 1st to 3rd October, 2021.

Dr W.H. Raja, Scientist SS (Fruit Science) received Best poster paper award for the research paper entitled Morpho-molecular characterization and genetic diversity analysis across a wild apple (*Malus baccata*) accessions using simple sequence repeat markers in the 9th Indian Horticulture Congress 2021, held at Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, Uttar Pradesh from 18th to 21st November, 2021.

Dr Mohd. Abas Shah, Scientist SS (Agricultural Entomology) received Best Presentation Award for paper Evaluation of chlorine dioxide for the management of common scab of potato in International Potato e-conference, New Paradigms in Food Security and Industrial Applications organized by ICAR-Central Potato Research Institute, Shimla (HP) from 23rd to 26th November, 2021.

Dr S U Nabi, Scientist (Plant Pathology) received M.J. Narasimhan Academic Merit Award Commendation Certificate for Presentation of paper entitled, Comparative Virome analysis in mosaic infected and asymptomatic apple cultivars using RNA sequencing: Development of multiplex RT-PCR and evaluation

of rootstocks for sensitivity to mosaic disease in the 73rd Annual Meeting (Virtual) of the Indian Phytopathological Society during National Symposium on “Plant Health and Food Security: Challenges and Opportunities” held at ICAR-IARI, New Delhi, from 25th to 27th March, 2021.

Dr Mohd Abas Shah, Scientist SS (Agricultural Entomology) got patent on “A Process for Culturing and Hardening of Potato Microplants Yielding Vigorous Plants”. Kaur R P, Singh A K, Kumar R, Devi S, Shah M A and Minhas J S. Application No. 202111047004, dt. 14-10-2021. Controller General of Patents, Designs and Trade Marks, India.

NEW JOINING/ RETIREMENT / TRANSFERS / PROMOTIONS

New Joining

Dr Om Chand Sharma, Principal Scientist, ICAR-CITH, Srinagar joined as Director (Act.) on 1st May, 2021 (F/N).

Dr Mohd. Abas Shah, Scientist (Agriculture Entomology) joined ICAR-CITH, Srinagar on 11th February, 2021 (F/N) after his transfer from ICAR-CPRI, Regional Station, Jalandhar (Punjab).

Dr Sudhakara N R, joined ICAR-CITH, Srinagar as Scientist (Soil Science) on 12th January, 2021 after completing training at NAARM, Hyderabad.

Shri Vishal Dinkar, joined ICAR-CITH, Srinagar as Scientist (Plant Breeding and Genetics) on 12th January, 2021 after completing training at NAARM, Hyderabad.

Shri Puneet Kumar, joined ICAR-CITH, Srinagar as Scientist (AS&PE) on 12th January, 2021 after completing training at NAARM, Hyderabad.

Shri Jawahar Lal Koul, joined ICAR-CITH, Srinagar as Assistant on deputation from ICAR-IVRI, Izatnagar, and Bareilly (U.P.) on 15th November, 2021 (F/N).

Superannuation/ Volunteer Retirement

Dr Desh Beer Singh, Director superannuated from Council's Service on 30th April, 2021(A/N).

Shri Mohd. Ramzan Wani, Technical Assistant (T-I-3) superannuated from Council's Service on 31st December, 2021(A/N).

Shri Mukhtar Ahmad, Assistant took Voluntary Retirement from Council's Service on 30th September, 2021 (A/N)

Transfers

Dr Sovan Debnath, Scientist-SS (Soil Science) transferred from ICAR-CITH, Regional Station Mukteshwar to ICAR-CAFRI, Jhansi (U.P) on 6th October, 2021(A/N).

Shri Akhil Thukral, Assistant Administrative Officer transferred from ICAR-CITH, Regional Station Mukteshwar to ICAR-NRC on Camel, Bikaner (Rajasthan) on 8th November, 2021

Promotions

Dr Mohd Abas Shah, Scientist (Agricultural Entomology) promoted under CAS from Scientist (Level 10) to Scientist SS (Level 11) on 14th October, 2021 w.e.f 1st July, 2019.

Shri Diwan Chandra, Assistant, ICAR-CITH, Regional Station Mukteshwar promoted as Assistant Administrative Officer w.e.f. 24th July, 2021(A/N).

Shri Showkat Ahmad Mir, Assistant, ICAR-CITH, Srinagar promoted as Assistant Administrative Officer w.e.f. 24th July, 2021(A/N).

Smt. Shahida Rafiq, Personal Assistant ICAR-CITH, Srinagar promoted as Private Secretary W.e.f. 30th June, 2021(F/N).

Shri Reyaz Ahmad Mir, Assistant, ICAR-CITH, Srinagar promoted as Assistant Administrative Officer w.e.f. 18th September, 2021(A/N).

Shri Tariq Ahmad Mir, Stenographer (Gr-III) ICAR-CITH, Srinagar promoted as Personal Assistant on 30th June, 2021(F/N).

Shri Farman Ali, Senior Technical Assistant (T-4)/ Driver ICAR-CITH, Srinagar promoted as Technical Officer(T-5)/Driver w.e.f. 1st January, 2021(F/N).

Shri Vinod Chandra, Technical Officer (T-5), ICAR-

CITH, Regional Station, Mukteshwar was promoted on 6th March, 2021 as Sr. Technical Officer (T-6) w.e.f. 21st March, 2019.

Shri Eshan Ahad, Technical Officer (T-5), ICAR-CITH, Srinagar was promoted on 6th March, 2021 as Sr. Technical Officer (T-6) w.e.f. 21st March, 2019.

Dr Shoaib Nissar Kirmani, Sr Technical Officer (T-6), ICAR-CITH, Srinagar was promoted on 22nd April, 2021 as Assistant Chief Technical officer (T-7/8) w.e.f. 13th April, 2020.

SUCCESS STORIES

Rootstock multiplication technology transformed the life of Nursery Entrepreneur from Chamba, HP

By adopting the technology developed by the ICAR-Central Institute of Tropical Horticulture, Srinagar, Jammu & Kashmir, Shri Pawan Kumar Gautum from Saloni, Chamba District of Himachal Pradesh has set himself as an example of a successful Progressive Nursery Entrepreneur in the area. He is the 3rd Generation Nursery Grower as his grandfather started the nursery production of Temperate Fruit Crops and established the Apple Orchards 35 Years ago. Following the footsteps of his grandfather, his father continued to serve the farming community by the production of quality planting material over the Nursery area of $\frac{1}{2}$ Ha. As the growers in the region have started shifting from the low density to high-density orcharding systems, the demand for Apple Plants on traditional Rootstocks has reduced and imported clonal Rootstocks have surged up. The family which is mostly dependent on Nursery raising also aspires to shift; but the poor financial base was the main bottleneck in transformation.

Shri Pawan started the raising of Clonal Rootstocks during 2015 on small scale inside a Greenhouse area of 105 Sq. Metres. He was able to produce only 1,800 Clonal Rootstocks of Apple per Year with this limited facility with a profit of around Rs 1.45 Lacs per Year. The evolved farmer adopted the technology “Vertical Expansion of Nursery under Protected Conditions” during 2021 under the proper guidance and supervision of the Institute with the endurable input cost of Rs. 35,000 for the procurement of inputs and labor, etc. Initially, he faced a lot of problems during the adoption like availability of inputs and negligible support from the family members; but, later with their support, he was able to complete all the operations well in time. He was success-

ful in the production of an additional 7,200 healthy plants with a well-developed root system suitable for grafting / budding (> 8 mm caliper size) Rootstocks in addition to his early production capacity of 1,800 Rootstocks which fetched him an additional revenue of Rs. 4.30 Lacs. The intervention of technology not only enhanced the family’s income by four times; but, the dream of a transition from conventional to Clonal Rootstock has also been fulfilled. Shri Kumar has become an early adopter and the Brand Ambassador of the Technology in the region by training and motivating other farmers for adoption of the technology. Keeping in view the interest of the other Nursery growers of the State, the Institute imparted five-day Training on “Quality Planting Material Production in Temperate Fruit Crops” to a group of 20 Progressive Nursery Growers along with Shri Pawan Kumar in December, 2021. The main purpose of the training was a detailed demonstration of the technology for easy adoption and its promotion on a large scale. The technology has not only ascertained to transform the lives of the small nurserymen; but, is a step forward towards Aatma Nirbhar Bharat as the proven technology has the potential for reducing the dependence on the import of Clonal Rootstock from the European and other countries.



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