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2. Date & Place (Village/ Town, District, State) of Birth:	31 st December, 1977 Vill. & PS. Mohammadpur More, PO. Sidhwalia, Dist. Gopalganj 841 423, Bihar, India	
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6. ACADEMIC CAREER AND PROFESSIONAL ATTAINMENTS

Degree	University/ Institution	Year	Specialization	Distinction, if any
B.Sc.	Institute of Agricultural Sciences, BHU, Varanasi 221 005, UP	2002	Agriculture	-
M.Sc.	College of Agriculture, GBPUA&T, Pantnagar, 263 145, Uttarakhand	2004	Horticulture (Pomology)	-
Ph.D.	Division of Fruits and Horticultural Technology, ICAR- IARI, Pusa, 110 012, New Delhi	2007	Horticulture (Pomology)	-
Post Doctoral	-	-	-	-
ICAR-JRF	ICAR, New Delhi	2002	Horticulture	All India Rank-0004
CSIR -JRF	CSIR-UGC, New Delhi	2003	Life Sciences	
CSIR -SRF	CSIR-UGC, New Delhi	2006	Life Sciences	

Total length of Service:15 Years and 7 Months

Position held	Institution	Period of involvement	No. of years and months
Scientist on Probation	ICAR-NAARM Hyderabad, A.P.	7 th January, 2008-14 th May, 2008	5 months and 7 days
Scientist (Horticulture-Fruit Sciences)	ICAR-CAZRI, Jodhpur , Rajasthan	15 th May, 2008 - 27 th August, 2008	3 month and 12 days
	ICAR-CIAH, Bikaner, Rajasthan	28 th August, 2008- 10 th April, 2011	2 years, 6 month
Scientist SS (Fruit Sci.)	ICAR-NRC on Litchi, Muzaffarpur, Bihar	11 th April, 2011-6 th January, 2012	8 month and 27 days
		7 th January, 2012-6 th January, 2017	5 years
Senior Scientist (Hort.-Fruit Sciences) (RGP: 8000)		7 th January, 2017-6 th January, 2020	3 years
--Do.... RGP: 9000 (Level 13A)		7 th January, 2020- 31 st March 2022	2 year and 3 months
	ICAR-CISH, Lucknow, UP	1 st April, 2022 – till date	Contd.

7. Details of the Research Experience

i. Project handled (in-House/ External Funded) as PI and Co-PI

EXTERNALLY FUNDED PROJECTS

Year	As PI/Co-PI	Name of the Research Projects	Name of Funding agency	Cost of the Project (in Rs.)	Years completed
1 st February, 2012-2 nd December, 2013	Project Associate equivalent to Co-PI	<i>UNEP-GEF/TFT Project – ‘Conservation and Sustainable Use of Cultivated and Wild Tropical Fruit Diversity: Promoting Sustainable Livelihoods, Food Security and Ecosystem Services’</i>	Bioversity International, Rome	Rs. 47.50 Lakhs	1 year and 10 months
3 rd December, 2013 – 31 st March 2015	Site Co-ordinator equivalent to PI				1 years and 4 months
31 st May 2013- 31 st March 2014	CCPI equivalent to PI for the centre	<i>‘Strengthening of Digital Library and Information Management under NARS (e-GRANTH)’</i>	ICAR-NAIP, New Delhi	Rs. 14.33 Lakhs	10 months
1 st February, 2013 – 31 st March 2017	Co-PI	<i>‘National Database on Mango’</i>	Dept. of Biotechnology, (GOI), New Delhi	Rs. 26.38 Lakhs	4 year and 1 months
1 st November, 2016-30 th June, 2017	Co-PI	Farmer’s FIRST Project <i>(Improved livelihood through good Practices in agricultural production system)</i>	SMD, Agriculture Extension, ICAR HQ, New Delhi	45.40 Lakhs	8 Months
1 st July, 2017- 31 st March, 2020	PI			115.00 Lakhs	2 Year 9 Months
1 st January, 2020-31 st March 2022	Nodal Officer equivalent to PI	Project: “Litchi Unnati” (in collaboration of <i>Dehaat</i> , an start-up in Agriculture)	Coca Cola India Private Limited (CCIPL), Gurugram, India	49.50 Lakhs	2 Year 3 Months
1 st January, 2021-31 st March 2022	PI	<i>‘Doubling Litchi Production by Integrating Good Management Practices’</i>	ATMA, Muzaffarpur (Dept. of Agriculture, Govt. of Bihar)	2.25 Lakhs	1 Year 3 Months
1 st October, 2022- till date	Co-PI	<i>Evaluation of diversity and decline of indigenous seedling mango of Bihar and study for its conservation strategy</i>	Bihar State Biodiversity Board, Patna (Govt. of Bihar)	8.52 Lakhs	Contd.

IN-HOUSE PROJECTS

Title of the Research Project	Level of Association (PI/Co-PI)	Period	
		From	To
Improvement of Aonla and Bael for higher yield and nutraceutical value	Co-PI	01/03/ 2023	Contd.
Collection, Conservation and Evaluation of Mango, Guava and Jamun cultivars under hot arid conditions’ (at ICAR-CIAH, Bikaner)	PI	01/09/2008	10/04/2011
Post-Harvest management and value addition in arid horticultural crops’ (at ICAR-CIAH, Bikaner)	PI	01/09/2008	10/04/2011
‘Standardization of maturity standards, harvesting and post harvest handling techniques for litchi fruits’ (at ICAR-NRCL, Muzaffarpur)	PI	01/09/2011	31/03/2012
Influence of polyamines on pheno-physiological attributes and fruit quality of	Co-PI	01/10/2015	30/06/2018

litchi' (at ICAR-NRCL, Muzaffarpur)			
Investigation and establishing the physiological and biochemical relations for improved litchi production' (at ICAR-NRCL, Muzaffarpur)	Co-PI	01/04/2012	31/03/2019
Flagship Project-2: 'Shoot physiology in relation to flowering and fruiting in litchi' (at ICAR-NRCL, Muzaffarpur)	PI	01/04/2012	31/03/2022
Inter Institutional Project: 'Studying methylene cyclo-propyl glycine content in Litchi (<i>Litchi chinensis</i> Sonn.) fruits' (With ICAR-NRC on Grapes, Pune)	Co-PI	01/04/2017	31/03/2018
Inter Institutional Project : Mechanization of Selected operations in Litchi Cultivation (with ICAR-CIAE, Bhopal, MP)	Co-PI	01/11/2019	31/03/2022

ii. Please list the principal findings and their socio-economic, scientific, technological significance?

NAME OF CROP	RESEARCH ACCOMPLISHMENT
Litchi	<ul style="list-style-type: none"> • Among four cultivar (Shahi, China, Bedana and Rose Scented) of litchi, we found 'Shahi' trees had highest P_n, Chlorophyll <i>b</i> content and thereby it might have attributed to highest no. of fruits per panicles. • Maximum Net photosynthetic rate (P_n), water use efficiency increased to 50 – 100 % and leaf carboxylation efficiency (CE) also increased by 10-100 % by application of 2 % KNO_3 and 2 .0 g <i>paclobutrazol</i> (PBZ), over control trees if applied during post harvest flush emergence phase. • Application of 2.0 g PBZ, girdling in September and manual de-flushing during December was best for 'China' Litchi to inhibit emergence of winter flushes and ensure flowering. • Natural flush emerged in July and August, immediately after crop harvest, bore maximum pure panicle and flowers. • Application of 2.0 and 4.0 g <i>paclobutrazol</i> (PBZ) advanced colour turning in fruits by 5 days. • Spray of 3.0 and 4.0 g PBZ encouraged cauliflorous growth in the trees and reduces leaf area. • Litchi cv. China has lower photosynthetic rate (P_n), transpiration rate (e), internal CO_2 concentration (C_i) and stomatal conductance (g_s) than 'Shahi' litchi. • Floral shoots had more <i>chlorophyll a</i>, <i>total Chl</i>, P_n, e, reducing sugar and total CHO but less C_i, g_s over non-floral shoots. Total Chl reduced in floral shoots from fruit set to after harvest period. • In contrast to China litchi, the non floral shoots of 'Shahi' litchi have higher total phenol content than floral shoots. Proline content increased in floral than non floral shoots in 'Shahi' but reverse trend was found in China litchi. • PBZ application during September month in litchi cv. China (12 year old) has reduced gibberellin acid (GA_3) content almost by 20 percent with increased abscisic acid (ABA) content over control trees. • 4.0 g PBZ or 1.0 % KNO_3 led to highest ABA and lower IAA contents and over all content of cytokinins in terms of zeatin (Z), dihydrozeatine riboside (DHZR), and zeatin riboside (ZR) marginally improved after higher dose of PBZ application. • It was also observed that there is strong tendency of alternate bearing in litchi trees of variety 'China' and flowering was irregular and 4.0 g PBZ applied through TSLP method has been yielded maximum no. of fruit per tree (2567.66) while in control it was only 32-140 fruits per tree • The postharvest polyamines (spermine and putrescine @ 0.5 and 1.0 mM) dip treatment extended the postharvest life of Shahi litchis up to 28 days in cold storage conditions in comparison to control (16 days). • 'China' litchis fruit pulp and peel were completely free of any MCPG content. • 31.92 ppm of MCPG was found in 'Shahi' peel at about 30 days before harvest stage. • The endogenous hormones like IAA, although higher in floral shoots of litchi by 10-15 %, but GA_3 was also higher. • ABA played major role for litchi flowering and floral shoots should have 20-30 % higher ABA over non floral shoots. • The floral shoots had higher concentration of cytokinins in terms of Z, ZR than the non-floral shoot.

	<ul style="list-style-type: none"> The GA₃, IAA is higher in leaf of litchi cv. China and lesser concentration of ABA, Z, ZR etc than 'Shahi' litchi.
Mango	<ul style="list-style-type: none"> Kesar', 'Amrapali', and 'Rajapuri' mango were better performing genotypes under the hot arid environment.
Guava and Jamun	<ul style="list-style-type: none"> Guava cultivar 'Sweta' 'Lalit' and 'Allahabad Safeda' and Jamun cv. GJ-08 and GJ – 02 are supposed to be better performing genotypes [under hot-arid environment].
Ber	<ul style="list-style-type: none"> Pre-harvest spray of CaCl₂ (0.4 %) + Boric acid (1.0 %) coupled with packaging in completely packed poly bags (Ziplocked with 12 pinhead holes) is able to prolong shelf life of Ber fruits with (by 12 days) better quality parameters.
Germplasm Collected	<ul style="list-style-type: none"> ❖ Collected 22 germplasm of Aonla from ICAR-NBPGR-RS, Ranchi for budding on various rootstocks during 2009 at ICAR-CIAH, Bikaner, Rajasthan. ❖ Collected 15 germplasm of mango, 6 germplasm of guava and 2 germplasm of Jamun from CHES, Godhra, Gujarat, ICAR-CISH, Lucknow, GBPUA&T, Pantnagar and MPUA&T, Udaipur, Rajasthan.
Registration of value-added products with FSSAI	<ul style="list-style-type: none"> ❖ Received the FSSAI registration for 37 products on subtropical fruits on behalf of Fruit Processing Unit, ICAR-CISH, Lucknow

8. RESEARCH PUBLICATIONS:

Sl. No.	Publications (with name of author(s), year of publication, title, name of the journal, volume No. and page Nos. relevant to your field of specialisation)
1.	Singh, Sanjay Kumar. , Singh, Sanjay Kumar and Sharma, Ram Roshan. (2010). Effects of pruning intensity on the biochemical status of shoot buds in three different mango (<i>Mangifera indica</i> L.) cultivars planted at high density. <i>J. Hort. Sci. Biotech.</i> , 85 (6): 483–490.
2.	Singh, Sanjay Kumar , Singh. S.K., Sharma, R.R. and Srivastav, M. (2009). 'Effect of pruning on morpho-physiological parameters and microclimate under high density planting of mango (<i>Mangifera indica</i> L.) <i>Indian J. Agricultural Sciences</i> , 79 (8):632-635.
3.	Singh, Sanjay Kumar , Malhotra, S K., Bhargava, R., Singh, R, S. and Shukla, Anil .Kumar. (2017). Morphological and physiological characterization of guava (<i>Psidium guajava</i>) under hot-arid zone of Rajasthan. <i>Indian J. Agricultural Sciences</i> . 87 (4):491-495.
4.	Malhotra, S. K, Singh, Sanjay Kumar and Nath, Vishal (2018). Physiology of flowering in litchi (<i>Litchi chinensis</i>): A review. <i>Indian J. Agricultural Sciences</i> , 88 (9): 1319–30.
5.	Marboh, E. S., Singh Sanjay Kumar , Pandey, Swapnil, Vishal Nath, Gupta A. K. and Pongener, A. (2017). Fruit cracking in litchi (<i>Litchi chinensis</i>): An overview. <i>Indian J. Agricultural Sciences</i> , 87 (1):3-11.
6.	Panwar, Rashmi, Singh, Sanjay Kumar. , Singh, C.P. and Singh, P.K. (2007). Mango fruit yield and quality improvement through fertigation along with mulch. <i>Indian J. Agricultural Sciences</i> , 77 (10):680-684
7.	Pandey, Swapnil, Singh, J., Singh, Sanjay Kumar and Mourya, I. B. (2015). Influence of growing environment on growth, yield and chemical composition of strawberry (<i>Fragaria × ananassa</i>) fruits under open vs naturally ventilated polyhouse conditions. <i>Indian J. Agricultural Sciences</i> , 85 (12):1540-45.
8.	Singh, Sanjay K. , Singh, C.P. and Panwar, R. (2009). Response of fertigation and plastic mulch on growth characteristics of young 'Dashehari' mango. <i>Indian J. Hort.</i> , 66 (3):390-392
9.	Singh, Sanjay Kr. , Singh. S.K., Srivastav, M., Sharma, R.R. and Patel, V.B. (2010). Influence of pruning intensities on leaf nutrient composition in some mango (<i>Mangifera indica</i> L.) cultivars planted under high density. <i>Indian J. Hort.</i> , 67 (1):16-20.
10.	Singh, Sanjay Kumar. , Singh, S.K., Shrama, R.R. and Patel, V.B. (2010). Influence of pruning intensity on flowering, fruit yields and floral malformation in three mango cultivars planted under high density. <i>Indian J. Hort.</i> 67 (Special Issue): 84-89
11.	Singh, Sanjay Kumar , Singh, R.S. and Awasthi, O.P. (2013). Influence of pre- and post-harvest treatments on shelf-life and quality attributes of <i>ber</i> fruits. <i>Indian J. Hort.</i> , 70 (4): 610-614.

12.	Singh, Sanjay Kumar , Pandey, Ankit K., and Singh, Prabhakar (2019). Gaseous exchange, biochemical parameters and yield as affected by application techniques and doses of Paclobutrazol in litchi tree. <i>Indian J. Hort.</i> 76 (2): 265-272.
13.	Singh, Sanjay Kumar , Singh, Awtar, Nath Vishal, Parthasarathy, V A, Sthapit B, Rajan, S and Vinoth, S. (2015). Genetic Diversity in Seedling Populations of Mango. <i>Indian J. Plant Genet. Resour.</i> 28 (1): 123-131.
14.	Singh, Sanjay Kumar , Nath, Vishal, Rajan, S. and Pandey, S.D. (2019). Surveying mango diversity and its custodian farmers in the states of Bihar and Jharkhand, India. <i>Indian J. Plant Genet. Resour.</i> 32 (2):200-206
15.	Singh, Sanjay Kumar. , Singh. S.K. and Sharma, R.R. (2009)). Endogenous phytohormones after pruning in three mango cultivars planted under high density. <i>Indian J. Plant Physiology</i> , 14 (4):392-396.
16.	Gajanana, T.M., Dinesh, M.R., Rajan, S., Vasudeva, R., Singh, Sanjay Kumar , Lamers, Hugo A.H., Parthasarathy, V.A. Sthapit, B and V Ramanatha Rao (2015). Motivation for On-farm Conservation of Mango (<i>Mangifera indica</i>) Diversity in India: A Case Study. <i>Indian J. Plant Genet. Resour.</i> 28 (1):1-6.
17.	Vasudeva R, Sthapit B, Salma I, Changtragoon S, Arsanti IW, Gerten D, Dum-ampai, N, Rajan, S, Dinesh, MR, Singh, IP, Singh, Sanjay Kumar , Reddy, BMC, Parthasarathy, VA and V Ramanatha Rao (2015). Use Values and Cultural Importance of Major Tropical Fruit Trees: An Analysis from 24 Village Sites Across South and South East Asia. <i>Indian J. Plant Genet. Resour.</i> 28 (1):17-30
18.	Gajanana, TM, Rajan, S, Singh, I P, Dinesh, MR, Vasudeva R, Singh, Sanjay Kumar , Lamers, Hugo, Parthasarathy, VA, Sthapit, B and Ramanatha Rao V. (2015). Fruit Diversity Fair and On-farm Conservation: An Indian Experience. <i>Indian J. Plant Genet. Resour.</i> 28 (1): 80-86.
19.	Dinesh, M.R., Rajan S., Singh, Sanjay Kumar , Singh IP, Ravishankar, KV, Reddy, BMC, Parthasarathy, VA, Sthapit B., Ramanatha Rao V and BS Sandya (2015). Heirloom/ Seedling Mango Varieties of India: Potentialities and Future. <i>Indian J. Plant Genet. Resour.</i> 28 (1):139-151
20.	Kumari, P., Singh, Sanjay Kumar, & Vyas, S. (2021). Influence of Bearing regulated Chemicals and girdling on leaf chlorophyll, sugars and leaf nutrient status in litchi cv. China. <i>Eco. Env & Cons.</i> 27 (3):1208-1214 (as corresponding author)
21.	Kumari, P., Singh, Sanjay Kumar , and Vyas, S. (2021). Effect of flowering regulating chemicals and girdling on winter flushing, yield and fruit quality in Litchi cv. China. <i>Journal of Tropical Agriculture</i> , 59 (1):31-37 (as corresponding author)
22.	Singh, Sanjay Kumar , Srivastava, K., Pandey, S.D., Gupta, Alok Kumar and Nath, V. (2019). Assessment of motivation factor for conservation of mango diversity and IPM practices. <i>Multilogic in Science</i> , (Special issue):15-20.
23.	Srivastav, K., Patel, R.K., Kumar, Sujeet and Singh, Sanjay Kumar (2021). Management options for litchi fruit & shoot borer, <i>Conopomorpha sinensis</i> : Prospects and challenges. <i>Ann. Pl. Protec. Sci.</i> 28 (1):46-50
24.	Nath, V., Singh, Jyoti, Pandey, S. K., Singh, Sanjay Kumar , Marboh, E.S., Pandey, S. and Tiwari, G.S. (2020). Influence of plant spacing and system of planting on tree physiology, yield and quality of litchi cv. Shahi. <i>International J. Innovative Horticulture.</i> 9 (1):62-68.
25.	Kumar, A., Singh, Sanjay Kumar , Pandey, S. D., Patel, R.K., Srivastava, K. and Nath, V. (2020). Regulation of bearing potential for sustainable production and quality improvement of litchi in Indian sub continent. <i>Acta Hort.</i> 1293 :41-46.
26.	Singh, Sanjay Kumar , Pandey, S.D., Purbey, S.K., Kumar, A. and Nath, V. (2020). Does litchi flowering vary with cultivars: still an enigma? <i>Acta Hort.</i> 1293 :91-98.
27.	Srivastava, K., Patel, R.K., Pandey, S.D., Kumar, A., Singh, Sanjay Kumar , and Nath, V. (2020). Management of litchi fruit and shoot borer, <i>Conopomorpha sinensis</i> using organic pesticides. <i>Acta Hort.</i> 1293 : 213-218.
28.	Singh, Sanjay Kumar ; Kumari, Pragya; Vyas, S. and Nath, Vishal (2021). Influence of chemicals and girdling on tree physiology and fruiting of litchi. <i>Indian J. Hort.</i> 78 (3): 261-267
29.	Nath, V., Lal, N., Singh, Sanjay Kumar , Pandey, S., and Prakash, K. (2022). Seventy-five years of research and development in Litchi. <i>International J. Innovative Hort.</i> 11 (1):47-61
30.	Lal, Narayan, Singh, A., Singh, Sanjay Kumar , Kumar, A., Pandey, S. D., and Nath, V. (2023). Morphological diversity in litchi based on phenological traits. <i>Indian J. Hort.</i> 80 (1):30-36.

9. Processes/Patents/Products/Technologies and Books etc.

I: Processes, Patents, Varieties, Products and Technologies

Identification of Custodian Farmers	<ul style="list-style-type: none"> ❖ Profile of 12 custodian farmers of mango and pummelo have been documented from Pusa Site, Bihar. ❖ 140 custodian farmers of mango have been identified from thirty four districts of Bihar and 8 districts of Jharkhand who are having >10 varieties in their orchard.
Formation of Self Help Group	❖ 40 SHGs (mostly women) was formed in 5 community villages for value addition/processing of various fruits and vegetables, multiplication and distribution of elite plant materials and sale of pummelo in distant market.
Registration of mango variety	❖ The duly filled proforma of Farmer's Variety on mango (16 in No.) and Pummelo (10 in No.) identified at Pusa Site, Bihar has been submitted to PPV&FRA, New Delhi.
Documentation of Traditional knowledge	❖ Three TKs (Traditional Knowledge) was documented as ' <i>Conservation of pummelo in home stead through Chhat Puja</i> ', ' <i>Multi fruits home stead garden</i> ' and ' <i>multi-variety mango orchard</i> '.
Technology for regular flowering in litchi	❖ Light thinning of braches after harvest, application of paclobutrazol through TSLP methods or spray of KNO ₃ (2 %) or practicing girdling during September month, manual de-flushing during December month and withheld of irrigation during November to January month led to assured flowering in Litchi cv. China.
Value Added Products (Arid Fruits)	<ul style="list-style-type: none"> ❖ The candy and preserve of 'Thornless' 'Sendhura' and 'Banarasi' Ber are better. ❖ 'Krishna' aonla was best suited for preserve making like Ber cv. Seb (large size and almost round) ❖ For candy making, NA-06 and NA-10 Aonla were best due to their small sizes. ❖ 'Gola' variety of Ber is better Jam (organoleptic value 9.5/10) and for squash making due to better quality pulp (uniformity and consistency). ❖ Among 12 tested Date palm cultivars, for dry dates making 'Zahidi', Khadrawy', and 'Chipchap' were best under oven drying and 'Khalas' in open [shaded] condition. ❖ Harvesting of Aonla fruits in November led to highest retention of Vitamin C (387.50 and 339.58 mg/100g pulp in NA-10' and 'Chakaiya', respectively) content, total sugars and reducing sugars. Vitamin C content reduced by 50-60 % when fruits are harvested in early December.
Pickles of seedling mango	❖ Mango pickles (dry and wet) prepared by four self help groups (SHGs) has been promoted as a premier product of seedling mangoes and two community of Jagdishpur and Mahamada was displayed at Mango diversity fair held on 3 rd June, 2014 at IIHR Bengaluru. Now 1.50 quintals are made by 3 SHGs and sold to the local market after proper labelling.
Library Management through KOHA	<ul style="list-style-type: none"> ❖ <i>Debian 7.3.1</i> and <i>Koha LS 3.14</i> has been installed and customization of KOHA-OPAC was completed. Standalone Server (Proliant ML 350 G6) from M/s Techlan, M. G. Road, Harideopur, Kolkata, was installed at the centre. ❖ Data entered against Books (1675 + 10 Statistical CDs) and Journals (1105 in No.) of NRCL Library was taken for Centralized Koha Implementation at ICAR-IARI, New Delhi
Video documentary	<ul style="list-style-type: none"> ❖ Two number of 15 min documentary [video films] (one each in English and Hindi) was made on '<i>Role of community in conservation of mango/pummel diversity including indigenous methods of pickle preparation by the women SHGs</i> ❖ <i>One</i> documentary [video films] (in Hindi) was made on '<i>Success stories on backyard poultry, duckery, Mushroom production and replacement of old variety with new one in rice and wheat</i>' under Farmer FIRST Programme.
Technology popularized (without patent)	<ol style="list-style-type: none"> 1) Malinagar community is getting better price for pummelo fruits in south Indian market (in Hyderabad during '<i>Chhatt</i>' Festival). 2) Six diversity orchards have been established, more than 100 plant of elite germplasm were prepared by community to enhance genetic resources for resource generation and lively hood security. 3) The litchi orchards can be benefited if we rear <i>desi</i> poultry (<i>Vanaraja, Kadaknath</i>) in rejuvenated orchard or established orchard of litchi at high density. 4) Due to rearing of birds in litchi orchard, we have reduced the cost on plant protection measured up to

1/3rd and fertilizer application to the tune of half of RDF (as N, P and K content of orchard soil improved by over 20 % than the normal orchard). Further, the weed's population has also been drastically reduced. We can ensure organic produce in terms of fruits of litchi.

- 5) Low-cost bamboo shelter for *Japanese quail* Farming for Landless Women farmers has been commercialized for two blocks of *East Champaran* district of Bihar.
- 6) For litchi, the rectangular system of planting with spacing of 8 m × 4 m under hedge row system is best for the farmers to harvest higher yield of 18-20 tons per ha against 8-10 tons per ha in normal square system of planting (i.e. 8 × 8 m or 10 × 10 m).

Clusters formation of litchi orchardists	<ul style="list-style-type: none"> ❖ 6 clusters of litchi orchardists in the districts of Muzaffarpur, Samastipur, Vaishali and East Champaran, Bihar has been developed towards increasing the productivity of litchi cv. Shahi and China, ❖ Subsequently, 12 high-density orchards have been established and revitalization of 25 orchards is completed.
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I. Books/ E-Book/ Technical Manual/ Book Chapters (with full citation)

BOOKS

1. Dinesh, M.R., Vasudeva, R., Rajan, S., **Singh, Sanjay Kumar**, Singh, I. P. Gajanana, T.M., Vinoth, S., Reddy, BMC, Parthasarathy, V. A. and Sthapit, B. (2014). Custodian of Tropical Fruit Tree Genetic Resources in India, *National Project Management Unit (UNEP-GEF/TFT Project)*, ICAR-Indian Institute of Horticultural Research, Bengaluru 560 089, 1-33pp
2. Singh, I.P., Dinesh, M.R., Gajanana, T.M., Rajan, S., **Singh, Sanjay Kumar** and Vasudeva, R., (2014). Tropical Fruit Trees, Farmers Traditional Knowledge: Community Primer on Good Practices for Diversity Management (Scripted and supplementary information searched by Sri. B.S. Somashekhar). *Biodiversity International, Office of South Asia, NASC, DPS Marg, Pusa Campus New Delhi*. 1-70pp
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CONVENER/RAPPORTEUR OF A TECHNICAL SESSION

1. **Convener** for Technical Session entitled '*Plant Canopy architecture, regulation of bearing and harvesting Systems*' *In: National Conference on Challenges and Options in Litchi Production and Utilization*, (6-7th June, 2017), ICAR-NRCL, Muzaffarpur
2. **Convener** for Technical Session 7: *Innovation in Genetic Resources Management and Designer Crops through conventional and Biotechnological Approaches for effective value chain.* *In: International Conference on Innovative Horticulture and Value Chain Management - Shaping Future Horticulture* (28-31st May, 2019), GB Pant University of

Agriculture & Technology, Pantnagar, 263 145, Uttarakhand

3. **Convener** for Technical Session III: IPM/IDM modules and its feasibility to sustain Fruit Production In: “National Conference on Integrated Plant Health Management in Fruit Crops” held at ICAR-NRCL, Muzaffarpur (4th September, 2019).
4. **Rapporteur** for Online Oral Presentation for the Technical Session-VII (*Improving Livelihoods through Technological interventions/ Productions Technologies in Horticulture*); Technical Session-VIII (*Rootstocks and Planting Material*) and Technical Session-IX (*Exploiting Alternate Production System for Profitability*) and Technical Session – X (*Postharvest Management and Value Addition*) during 9th Indian Horticulture Congress-2021 on Horticulture for Health, Livelihoods and Economy’ (18-21st November, 2021) at CSAU&T, Kanpur, UP
5. **Rapporteur** for Inaugural Session (8th March, 2022): IX Group Discussion of ICAR-AICRP on Fruits (8th to 11th March, 2022) held at ICAR-IIHR, Bengaluru, Karnataka.

AS REVIEWER

- *Fruits* (Published from Montpellier, France)
- *African Journal of Biotechnology* (Published under academicjournals.org)
- *African Journal of Agricultural Research* (Published under academicjournals.org)
- *Indian Journal of Horticulture* (Published from New Delhi, India)
- *The Journal of Horticultural Science and Biotechnology*, Kent, London for the year 2018-19.
- Reviewer of *Scientia Horticulture* (MS No. HORTI24306) during 2019, 2021
- Reviewer of *Current Science*, *Journal of Environmental Biology*, *Journal of Horticultural Sciences* during 2022-23

GUIDING PG RESEARCH

1. **Co-Guide** for M. Sc. (Horticulture-Fruit Science)) student, Mr. Ankit Kumar Pandey, enrolled with Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh
2. **Co-Guide** for Ph. D. (Botany) student, Mr. Pragya Kumari, enrolled with Govt. Holkar Science College, Indore (Devi Ahilyabai University, Indore) M. P.
3. **Major Guide** for M. Sc. (Horticulture-Fruit Science)) student, Mr. Vinay Kumar, enrolled with Dr. Rajendra Prasad Central Agricultural University (DRPCA), Pusa, Samastipur, Bihar
4. **Co-Guide** for Ph. D. (Ag. Zoology) student, Mr. Swati Suman, enrolled with University Department of Zoology, B.R.A. Bihar University, Muzaffarpur, Bihar

LIFE MEMBERS OF SOCIETY

1. Life Member of **Horticultural Society of India, New Delhi** (since 2005)
2. Life Member of **Confederation of Horticultural Association in India (CHAI)**, New Delhi (since 2012)
3. Life Member of **Society for Development of Sub-tropical Horticulture (SDSH)**, ICAR-CISH, Rehmankhera, Lucknow (since January, 2017)
4. Life Member of **Society for Development of Arid Horticulture**, ICAR-CIAH, Bikaner, Rajasthan (since April, 2018)
5. Life Member of **Society for Advancement of Research on Pomegranate**, Solapur, Maharashtra (Since 2015)
6. Life Member of **Indian Society of Plant Genetic Resources**, ICAR-NBPGR, Pusa, New Delhi. (since April, 2019)

POPULAR ARTICLE

9. Singh, Sanjay Kr., Singh, R.S. and Saroj, P. L. (2009). बेहतर बाग प्रबंध तकनीक से फल उत्पादन बढ़ाएँ., **मरू बागवानी**, 3: 38-41
10. सिंह, संजय कुमार; ओमप्रकाश अवस्थी एवं रमाशंकर सिंह (2010). आवलां – साज संवार और उत्पादों की बहार. **फल फूल**, 31(4):26-29
11. सिंह, संजय कुमार; शिवराम मीना और हरे कृष्ण (2010). बेर एवं आवलां के लाभकारी गुण व औषधीय उपयोग., **मरू बागवानी**, 5: 34-39
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15. Nath, Vishal, Singh, Sanjay Kumar, Singh, R.S. and Singh, Sanjay (2016). An arid fruit to make Farmer’s richer. *Indian Horticulture*, 61(6):18-23
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17. सिंह, संजय कुमार, विशाल नाथ, रामशीष कुमार और जयप्रकाश वर्मा (2016). खेती से किसान की आय दोगुना करने के उपाय, **लीचिमा**, 2(1): 60-2
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23. शर्मा, स्वाति, नाथ, विशाल, कल्याण वर्मन, **संजय कुमार सिंह** और अलेमवती पोंगेनर (2018). लीची एक फायदे अनेक, **उद्यान रश्मि**, 16 (2):16-18
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28. **सिंह, संजय कुमार** ; पटेल, रामकिशोर ; कुमार सुजीत एवं श्रीवास्तव, कुलदीप (2020). आम व लीची आधारित कृषि प्रणाली। **सब्जी किरण** (भा.कृ.अनु.प.- भारतीय सब्जी अनुसंधान संस्थान, वाराणसी, उत्तर प्रदेश की राजभाषा पत्रिका) 14(1):73-77
29. **सिंह, संजय कुमार** ; कुमार, सोमेश ; कुमार, अमित ; कुमार, सुजीत एवं श्रीवास्तव, कुलदीप (2021). अतिरिक्त आय के लिए लीची के बाग में मुर्गी पालन। **सब्जी किरण** (भा.कृ.अनु.प.- भारतीय सब्जी अनुसंधान संस्थान, वाराणसी, उत्तर प्रदेश की राजभाषा पत्रिका) 15(2):69-73
30. कुमारी वंदना; **संजय कुमार सिंह** एवं शरद कुमार द्विवेदी (२०२२). बुंदेलखंड की महिलाओं के स्वास्थ्य सुधार हेतु फल-सब्जियों का महत्व. प्रगतिशील खेती २ (जुलाई २०२२): ४८-५३
31. **सिंह, संजय कुमार**; कुलदीप श्रीवास्तव एवं अजय कुमार त्रिवेदी (२०२२). प्रसंस्कृत फलों एवं सब्जियों के अपशिष्ट पदार्थों का उपयोग. **सब्जी किरण** (भा.कृ.अनु.प.- भारतीय सब्जी अनुसंधान संस्थान, वाराणसी, उत्तर प्रदेश की राजभाषा पत्रिका), १६(२): २९-३२

FULL LENGTH PAPERS IN PROCEEDINGS

1. Nath, Vishal, **Singh, Sanjay Kumar** and Purbey, S. K. (2012). Management for improvement of nutritive value of litchi and its processed product. *In: Proceeding of "Global Conference on Horticulture for Food, Nutrition and Livelihood options"* (28th – 31st, May 2012), OUA&T, Bhubaneswar. Odisha.
2. Nath Vishal, Pandey, S.D., Patel, R.K. and **Singh, Sanjay Kumar** (2014). "Overview of Hi-tech Litchi cultivation in India *In: "National Workshop cum Seminar on recent plasticulture, approaches towards precision Horticulture"* (February 22-23rd, 2014), Organised by PFDC, GBPUA&T Pantnagar and NCPAH, Ministry of Ag. GOI at Pantnagar, UA. 1-20pp
3. Nath, Vishal and **Singh, Sanjay Kumar** (2014). Physiology of Flowering in Litchi in Relation to Shoot Maturity. *In: Souvenir of National Seminar-cum-Workshop on Physiology of Flowering in Perennial Fruit Crops.* (Eds. Ravishankar *et. al.*). The Society for Development of Subtropical Horticulture (SDSH), ICAR-Central Institute for Subtropical Horticulture, Rehmankhara, Lucknow - 226 101, Uttar Pradesh
4. **Singh, Sanjay Kumar**, Kumar, A., Purbey, S.K., and Sharma, S. (2015). Improving flowering and fruit quality in litchi by applying PGRs and chemical regulators. *In: Awareness Programme on off-Season litchi cultivation in South India* (December, 10th 2015) at CHES (IIHR), Chettali, Kodagu, Karnataka, 52-58 pp
5. **Singh, Sanjay Kumar**, Nath, V. and Tripathi, M. (2016). Diversification of Horticulture as Mitigating measures for Climate Change. *In: Souvenir cum Lead/Abstract Proceeding Book of National Conference Emerging Challenges and Opportunities in Agriculture, Social, Plant, Environment, Co-Operatives & Technology* (ECOASPECT-2016) (10-11th September, 2016). Genesis Urban And Rural Development Society (Guard), Telangana. 35-41pp
6. Parthasarathy, V.A., **Singh, Sanjay Kumar** and Sthapit, B. (2016). Heirloom Varieties: Ornaments of Horticulture. *In: Souvenir cum Abstract Book on National Conference on Fruit Breeding in Tropical and Subtropical-An Indian Perspective.* (Eds. Shankaran *et. al.*). ICAR-Indian Institute of Horticultural Research, Bengaluru 560 089 (27-29th April, 2016), 11-17 pp
7. **Singh, Sanjay Kumar**, Marboh, E.S. and Kumari, Pragya (2019). "Physiology of Abiotic Stress affecting productivity of Mango, Litchi and Citrus" *In: Souvenir cum Abstracts of "National Conference on Integrated Plant Health Management in Fruit Crops"* (Eds. Srivastava *et al.*, 2019), ICAR-NRCL, Muzaffarpur, Bihar, 101-104p

SPECIAL ATTAINMENT

Role/Responsibilities	Title of The programme	Duration	Sponsoring Agencies
Course Co-ordinator	• <i>Biotechnological approach for the enhanced production of nutraceuticals in fruits and vegetables of arid zone</i>	15 days (February 14 – 27, 2011)	ICAR-NAIP, New Delhi
Course Co-ordinator	• <i>'Bioassay, production protocol and quality</i>	Short Course (10 days)	ICAR, New Delhi

	<i>control for Trichoderma based bio-pesticide'</i>		
Course Co-ordinator	<ul style="list-style-type: none"> • <i>Understanding Flowering Mechanism and Management of Bearing in Sub-tropical Fruit Crops'</i> 	Winter School (1-21 st December, 2017)	ICAR-New Delhi
Co-ordinator	<ul style="list-style-type: none"> • <i>Dairy Entrepreneurship and Livestock Management'</i> 	3 days (1-3 rd July, 2019)	FFP, ICAR-RCER, Patna
Co-ordinator	<ul style="list-style-type: none"> • Training on '<i>Smart Horticultural Practices for Quality Litchi Production'</i> at ICAR-NRCL, Muzaffarpur 	5 days (3-7 th December, 2019)	Director (Horticulture), Shimla, HP
Training Co-ordinator, Skill India	<ul style="list-style-type: none"> • Vermicompost Producer" (AGR/Q1203) 	30 days (22 February – 21 st March, 2020)	ASCI, Gurugram, India
	<ul style="list-style-type: none"> • Beekeepers" (AGR/Q5301) 	30 days (02-30 th March, 2020)	ASCI, Gurugram, India
Co-Chairman of Technical Session in National Conference	<ul style="list-style-type: none"> • Theme 5: <i>Horticulture, Forestry, Biological Science and Secondary Agriculture In: National Conference on Livelihood and Food Security (LFS-2018)</i> (27-28 January, 2018), Bihar Veterinary College, Patna • Technical Session VII (<i>Public private partnership in Plant Health Research, Bio safety, Skill Enhancement and low-cost plant production</i>)<u>In:</u> "<i>National Conference on Integrated Plant Health Management in Fruit Crops</i>" held at Gyan Samvardhan Kendra, ASM Foundation, Pusa/ ICAR-NRCL, Muzaffarpur (4th September, 2019) 		
Convener of a "National Conference	<ul style="list-style-type: none"> • "<i>National Conference on Integrated Plant Health Management in Fruit Crops</i>" held at Gyan Samvardhan Kendra, ASM Foundation, Pusa, Bihar and ICAR-NRCL, Muzaffarpur (3-4th September, 2019) 		
Member Secretary	<ul style="list-style-type: none"> • Research Advisory Committee (RAC); <i>Institute Research Council (IRC)</i>, (at ICAR-NRCL) (4 Years) • PME Cell, ICAR-NRCL, Muzaffarpur; <i>Committee for EFC/SFC for 12th Plan and 13th Plan</i> • Committee for publication of <i>Vision 2030, Vision 2050</i>, ICAR-NRCL, Muzaffarpur, Bihar 		
Editors of Centre's Publications	<ul style="list-style-type: none"> • Lead Editor, NRCL Annual Reports - 2010-11, 2011-12, 2012-13, 2013-14 and 2015-16, ICAR-NRCL Newsletter, 2015, 2016; Vision 2030, 2050, Co-Editors, ICAR-NRCL Annual Reports, 2016-17, 2017-18, 2018-19; Newsletter 2017, 2018, NRCL, <i>Year Planner-Training Programme and Services 2016-17</i>. 		
Infrastructure Developed	<ul style="list-style-type: none"> • Established Tree Physiology Laboratory, procured High Speed ultra-centrifuge, CIRAS-PP System and U-HPLC in CIF, ICAR-NRCL, Muzaffarpur 		
Nodal Officer	<ul style="list-style-type: none"> • PMS, PIMS-ICAR, HYPM, PMS-ICAR and PERMISNET-II (at ICAR-NRCL, Muzaffarpur) (01/07/2011-Till date) • SMS/Master trainer training programme, East Champaran and West Champaran, Bihar (2012) 		
Co-Nodal Officer, RFD	<ul style="list-style-type: none"> • Co-Nodal Officer, RFD Committee (at ICAR-NRCL, Muzaffarpur) (01/07/2013-31.03.2019) 		
Chairman	<ul style="list-style-type: none"> • Technical Evaluation Committee, Works Committee, Local Purchase Committee, Price Fixation Committee, ICAR-NRCL, Muzaffarpur 		
Member	<ul style="list-style-type: none"> • Publication Committee, 01/07/2013-31.03.2020 (6 years 9 months), Stored and Purchase Advisory Committee (SPAC), Price Fixation Committee (PFC), <i>Centre's ISO Certification Committee</i>, ITMU &TOT; AKM and Official Language Unit; Committee for MGMG & Litchi Bharat etc. 		
Invited/Lead Talks	<ul style="list-style-type: none"> • 6 in No. 		
Organizing Secretary	<ul style="list-style-type: none"> • "National Webinar on "<i>Post Pandemic Management in Fruits Crops</i>" held at ICAR-NRCL, Muzaffarpur (3rd September, 2020) 		
Talk on Dur	<ul style="list-style-type: none"> • 7 (Six on DD Bihar, One on <i>DD Kisan</i>, One on <i>DD, Patna</i> and One on <i>ETV, Bihar Jharkhand</i>) 		

Darshan, Prasar Bharti, GOI	
Co-ordinator	<ul style="list-style-type: none"> • 11 number of 5 days Training Programme sponsored by ATMA of Four Districts (East Champaran, Muzaffarpur, Samastipur, Sitamarhi, Vaishali) of Bihar, and 4 district of Gorakhpur Division, UP

10. Awards/ Fellowships/Recognitions and important assignment at National Level

i. Fellowships and Honours/ Awards by National Science Academies/ Societies

(a) **Fellow Award-2013** by Confederation of Horticulture Association of India (CHAI), New Delhi

(b) **JSIL Fellowship Award 2019** by Confederation of Horticulture Association of India (CHAI), New Delhi

INTERNATIONAL EXPOSURE:

Visited Vietnam, Thailand and Malaysia and presented two oral presentations during VIth International Symposium on Lychee, Longan and Other Sapindaceous Fruits

ii. Honours/Awards by Central Govt. Organisations/ Institutes e. g. ICAR, DST, DBT

ICAR-JRF (2002) in Horticulture (AIR-0004) awarded by ICAR, New Delhi

CSIR –JRF (2003) in Life Science, awarded by CSIR, New Delhi and CSIR –SRF (2006) by CSIR, New Delhi

iii. Young Scientist Awards/Associate ship by the National Science Academies:-

Awarded Overall Young Agricultural Scientist Award 2021 during *National Conference on India's Challenge-Contemporary Farming to Smart Farming* (8-9th April, 2021) (**Virtual**) at University Institute of Agricultural Sciences, Chandigarh University, Gharuan, Mohali (Punjab) 140 413, India

iv. Best Research Paper Award (Indicate details)

Best Poster Award for paper entitled '*Flushing Pattern and Physiology of Flowering in Litchi*' [theme area: Reducing cost of Production] by **The Horticultural Society of India, New Delhi** during 7th Indian Horticulture Congress-2016, (*an International Meet*), ICAR-IARI, New Delhi (15th -18th November, 2016)

Best Oral Presentation Award for paper entitled '*Growth and physiology affected Growth and physiology of flowering affected by paclobutrazol and potassium nitrate in litchi (Litchi chinensis Sonn.) trees*' *In: National Conference on Challenges and Options in Litchi Production and Utilization*, (6-7th June, 2017), ICAR-NRCL, Muzaffarpur

Best Oral Presentation Award for paper entitled "*Analysis of Plant Protection Measures followed by mango orchardists of Bihar and Jharkhand*" *In: "National Conference on Integrated Plant Health Management in Fruit Crops"* held at Gyan Samvardhan Kendra, ASM Foundation, Pusa, Bihar and ICAR-NRCL, Muzaffarpur (4th September, 2019)

Best Oral Presentation Award for paper entitled '*Environmental regulation and chemical induction of litchi (Litchi chinensis Sonn.) flowering*' *In: Progressive Horticulture Conclave (PHC)-2019 on Futuristic Technologies in Horticulture* (8-10th December, 2019), ICAR-Indian Institute of Sugarcane Research, Lucknow, UP

Best Oral Presentation Award (as co-author) on paper entitled '*Impact of COVID-19 on Litchi Production and Marketing*' *In: National WEBCON on Agricultural production & support system managing Covid-19 pandemic: Experience sharing and Strategies* (May 6th – 8th, 2020) CSAU&T, Kanpur U.P.

Best Oral Presentation Award for paper entitled "*The endogenous hormonal status of litchi shoots decide transition from vegetative to reproductive phases*" *In: National Seminar on "Fruit production in Eastern Tropical Region of India: Challenges and Opportunity"* (24-26th March 2022) at CHES, (ICAR-IIHR, Bengaluru) , Bhubaneswar, Odisha.

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