

## Department of Horticulture

Sr. No.	Name	Designation
1	<b>Dr. Binayak. Chakraborty</b>	<b>Assistant Professor &amp; Head</b>



### **Dr. Binayak Chakraborty**

Assistant Professor (Horticulture)

Fruit Science

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#### **Educational Qualification**

Degree	Discipline	Year of Passing	University
<b>B.Sc. (Hort.) Hons.</b>	Horticulture	2005	UBKV, Coochbehar, WB
<b>M.Sc. (Ag.) Hort.</b>	Horticulture	2007	GBPUAT, Pantnagar, UK
<b>Ph.D.</b>	Horticulture	2011	GBPUAT, Pantnagar, UK
<b>ICAR-NET</b>	Horticulture	2008	ICAR

#### **Service Experience till date**

Sr. No.	Institute/Office	Designation	No. of years served	Job profile
1.	College of Agriculture, NAU, Waghai	Assistant Professor (Horticulture)	3 years 10 months	Teaching Research Extension

**Seminar/Symposia/Workshop/Training attended**

Event	Number attended	Venue	Date	Topic	
Symposia	2	I	Dehradun, U.K.	21-23 Mar., 2010	National Symposium on Conservation Horticulture-2010
		II	GITAM Univ., Visakhapatnam, A.P.	22-26 Feb., 2011	10 <sup>th</sup> Biennial International Symposium on Nuclear Chemistry and Radiochemistry
Training	1	NRCL, Muzaffarpur, Bihar	11-31 July, 2016	Canopy architecture management in fruit trees for conservation and utilization of natural resources in changing climatic conditions	
Seminar	4	I	GBPUAT, Pantnagar	10 <sup>th</sup> Feb., 2010	Regional Seminar on Intellectual Property and Innovation Management in Knowledge Era
		II	MPUAT, Jhalawar, RJ	28-29 Dec., 2010	National Seminar on Precision Farming in Horticulture-2010
		III	GBPUAT, Pantnagar	11-12 Jan., 2012	National Seminar on Protected Cultivation of Vegetables and Flowers- A Value Chain Approach
		IV	NAU, navsari, GJ	11 <sup>th</sup> May, 2015	West zonal seminar on Enhancement of Crop Productivity Through Physiological Interventions

**Academic Achievements**

1. Qualified in, ICAR-JRF – 2005 (All India Rank – 12) in the branch of Horticultural Science
2. ARS-NET-2008 & 2009 qualified in Horticultural Science

**Awards & honors**

1. Awarded ICAR Merit Scholarship during M.Sc.
2. Awarded Jawaharlal Nehru Memorial Fellowship for doctoral studies.
3. Awarded Best Poster Presentation Award in National Symposium on Conservation Horticulture-2010, 21-23 March, 2010: Dehradun, U.K.

## Publications

S.No.	Publications	No. of Publications
1.	Research Paper National Journal	15
2.	Research Paper International Journal	07
3.	Workshop / Seminar / Symposia Proceedings	11
4.	Technical Documents	02
5.	Extension Bulletin	02
6.	Book Chapters	12
7.	Training Manual/Laboratory Manual	02

## Research projects handled

Sr. No.	Project title	PI/Co-PI	Level (Departmental/planned)	Year of approval	Status
1.	Effect of different polyamines on mango under ambient storage condition cv. Alphonso	PI	Departmental (AGRESKO)	2013	Ongoing
2.	Effect of spraying of different herbal oils in mango cv. Kesar	PI	Departmental (AGRESKO)	2016	Ongoing

## Details of publications

### Research papers (National):

1. **Chakraborty, B.**, Tiwari, J.P., Lal, Shant and Rajkumar (2008). Effect of organic manure and mulching on growth, yield and quality of winter season crop of guava (*Psidium guajava* L.) cv. Pant Prabhat. *Pantnagar Journal of Agricultural Research*, 62(2): 239-242.
2. **Chakraborty, B.** and Singh, P.N. (2011). Effect of rootstock and time of grafting in low-chill peach cultivars. *Progressive Horticulture*, 43(2): 281-284.
3. Kumar, S., **Chakraborty, B.**, Singh, N. (2010). Effect of different mulching materials in rose (*Rosa spp* L.) cv. Laher. *Journal of Ornamental Horticulture*, 13(2): 95-100.
4. Rai, P.N., Singh, P.N. and **Chakraborty, B.** (2009). Effect of organic manures on yield and quality of low-chill pear (*Pyrus pyrifolia* L.) cv. Gola. *Progressive Horticulture*, 41(1): 103-106.
5. Kumar, P., Maurya, R.K., Mishra, D.S. and **Chakraborty, B.** (2011). Prediction of some important floral and corm characters of gladiolus (*Gladiolus hybrida*) from its plant height. *Progressive Horticulture*, 43(1): 102-104.
6. Kumar, P., Maurya, R.K., **Chakraborty, B.**, Mer, R. and Mishra, D.S. (2011). Genetic variability and correlation studies in *Gladiolus hybrida* L. under tarai condition of Uttarakhand. *Progressive Horticulture*, 43(2): 323-327.

7. Bohra, J.S., Singh, P.N. and **Chakraborty, B.** (2011). Standardization of suitable grafting method and time for propagation of low-chill peach [*Prunus persica* (L.) Batsch] cv. Sharbati. *Pantnagar Journal of Research*, 9(1): 67-69.
8. Kumar, P., Maurya, R.K., **Chakraborty, B.**, Mer, R. and Mishra, D.S. (2011). Genetic variability and correlation studies in *Gladiolus hybrida* L. under tarai condition. *Annals of Horticulture*, 4(2): 140-146.
9. Parihar, B.V.S., Singh, P.N., **Chakraborty, B.** and Yadav, V. (2012). Effect of different plastic film packaging techniques on physico-chemical properties of low-chill peach under refrigerated storage condition. *Environment and Ecology*, 30(1): 52-56.
10. Singh, A.K., Singh, C.P., Kushwaha, P.S. and **Chakraborty, B.** (2012). Efficacy of post harvest treatments on fruit marketability and physico-chemical characteristics of Dashehari mango. *Progressive Horticulture*, 44(2): 215-219.
11. Kumar, P., Maurya, R.K., **Chakraborty, B.**, Mer, R. and Mishra, D.S. (2013). Genetic variability and correlation studies in *Gladiolus hybrida* L. under tarai condition of Uttarakhand. *Progressive Agriculture*, 13(1): 68-74.
12. Naghera, Y.V., Vaddoria, M.A., Mehta, D.R. and **Chakraborty, B.** (2015). Genetic diversity analysis in lablab bean [*Lablab purpureus* (L.) Sweet]. *Res. Environ. Life Sci.*, 8(2): 313-316.
13. Kumar, D., Mishra, D.S., **Chakraborty, B.** and Kumar, R., Singh, V.K. (2015). Postharvest treatment of salicylic acid and antioxidants on physioco-chemical properties and visual appearance of litchi cv. Rose Scented. *Bioved*, 26(1): 37-42.
14. Yadav, V., Singh, P.N. and **Chakraborty, B.** (2015). Response of foliar fertilization of micronutrients on fruit growth and yield in low-chill peach cv. Sharbati. *Progressive Horticulture*, 47(1): 43-47.
15. **Chakraborty, B.**, Bambharolia, R.P., Naghera, Y.V. and Sarkar, M. 2016. Exogenous application of polyamines maintains physico-chemical properties of mango (*Mangifera indica* L.) cv. Alphonso under ambient storage. Accepted for publication in *Environment and Ecology*.

#### **Research papers (International):**

1. **Chakraborty, B.**, Singh, P.N., Kumar, S. and Srivastava, P.C. (2014). Uptake and distribution of iron from different iron sources applied as foliar sprays to chlorotic leaves of low-chill peach cultivars. *Agricultural Research*, 3(4): 293-301. doi: 10.1007/s40003-014-0128-4
2. **Chakraborty, B.**, Singh, P.N., Singh, A.K. and Srivastava, P.C. (2014). Evaluation of different iron sources for iron chlorosis recovery in low-chill peach cultivars. *Journal of Plant Nutrition*, 37(2): 224-231. doi: 10.1080/01904167.2013.859693
3. **Chakraborty, B.**, Singh, P.N., Shukla, A. and Mishra, D.S. (2012). Physiological and biochemical adjustment of iron chlorosis affected low-chill peach cultivars supplied with different iron sources. *Physiology and Molecular Biology of Plants*, 18(2): 141-148. doi: 10.1007/s12298-012-0107-9
4. **Chakraborty, B.**, Singh, P.N., Kumar, S. and Srivastava, P.C. (2011). Kinetics of Fe<sup>+2</sup> uptake from different iron sources by low-chill peach leaf discs using <sup>59</sup>Fe as radiotracer. In *Proceedings of 10<sup>th</sup> Biennial International Symposium on Nuclear and Radiochemistry*, 22-26 Feb., 2011, Visakhapatnam, India. 597-598.
5. **Chakraborty, B.**; Singh, P.N.; Singh, A.K. and Yadav, V. (2012). Assessment of the recovery of physiological status in iron deficient low-chill peach plants with SPAD meter. *Research Journal of Agricultural Sciences*, 3(1): 156-158.
6. Kumar, D., Mishra, D.S., **Chakraborty, B.** and Kumar, P. (2013). Pericarp browning and quality management of litchi through antioxidants and salicylic acid during ambient storage. *Journal of Food Science and Technology*, 50(4): 797-802. doi: 10.1007/s13197-011-0384-2

7. Bisht, T.S., Sharma, S.K. and **Chakraborty, B.** (2015). Long term effect of different packaging materials on biochemical properties of wild apricot kernel oil. *Inter. J. Food Ferment. Technol.*, 5(1): 69-74. doi: 10.5958/2277-9396.2015.00010.0

### Workshop / Seminar / Symposia Proceedings

1. **Chakraborty B.**, Singh, P.N. and Yadav, V. (2010). Evaluation of suitable rootstock and grafting time for propagation of low-chill peach cultivars in plains of Uttarakhand. In: Abstract *National Symposium on Conservation Horticulture-2010.*, 21-23 March, 2010, Dehradun, p. 87.
2. **Chakraborty, B.**, Singh, P.N., Singh, A.K. and Srivastava, P.C. (2011). Iron resupply mediated deactivation of plant physiological stresses in iron chlorosis affected low-chill peach leaves. In: *Books of Abstract National Symposium on Technological Interventions for Sustainable Agriculture*, 3-5<sup>th</sup> May, 2011. GBPUAT Hill Campus, Ranichauri. 148p.
3. **Chakraborty, B.**, Singh, P.N., Singh, A.K. and Srivastava, P.C. (2010). Dose optimization of iron sources to manage lime induced iron chlorosis in low-chill peach cv. Saharanpur Prabhat. In: Souvenir: A Book of Papers and Abstracts *National Symposium on Precision Farming in Horticulture-2010*, 28-29 Dec., 2010, Jhalawar, p. 470.
4. **Chakraborty, B.**, Tiwari, J.P., Lal, Shant and Goswami, A.K. (2008). Influence of organic manure and soybean straw mulch on yield and quality of winter season crop of guava (*Psidium guajava* L.) cv. Pant Prabhat. In: *Souvenir, Ambedkar Jayanti National Seminar on Sustainable Horticultural Research in India: Perspective, Priorities and Preparedness*, 14-15<sup>th</sup> April 2008, Vidya Vihar, Rae Bareli Road, Lucknow-226 025, p. 61.
5. Kumar, S., **Chakraborty, B.**, Singh, N., Bisht, C.P. (2011). Effect of different mulching materials on vegetative and floral characters of rose (*Rosa spp.* L.) cv. Laher. In: *Books of Abstract National Symposium on Technological Interventions for Sustainable Agriculture*, 3-5<sup>th</sup> May, 2011. GBPUAT Hill Campus, Ranichauri. 141p.
6. Parihar, V.B.S., Singh, P.N., **Chakraborty, B.**, Yadav, V. (2011). Effect of plastic film packaging on quality parameters of low-chill peach under refrigerated condition. In: *Books of Abstract National Symposium on Technological Interventions for Sustainable Agriculture*, 3-5<sup>th</sup> May, 2011. GBPUAT Hill Campus, Ranichauri. 302p.
7. Goswami, A.K., Shukla, H.S., **Chakraborty, B.**, and Bhusan, K.B. (2008). Influence of boric acid, zinc sulphate and calcium nitrate on physico-chemical quality and storage behaviour of guava (*Psidium guajava* L.) cv. Sardar. In: *Souvenir, Ambedkar Jayanti National Seminar on Sustainable Horticultural Research in India: Perspective, Priorities and Preparedness*, 14-15<sup>th</sup> April 2008, Vidya Vihar, Rae Bareli Road, Lucknow-226 025, p. 25-26.
8. Nautial, M.P., Singh, P.N., Lal, R.L. and **Chakraborty, B.** (2008). Effect of plant bio-regulators (PBR<sub>s</sub>) on fruit set, fruit drop, fruit cracking and yield of litchi (*Litchi chinensis* Sonn.) cv. Rose Scented. In: *Abstract and Souvenir, 3<sup>rd</sup> Uttarakhand State Science and Technology Congress*, 10-11 Nov., 2008. Indian Institute of Technology (IIT), Roorkee. p. 29.
9. Rajkumar, Tiwari, J.P., Lal, Shant and **Chakraborty, B.** (2008). Influence of zinc sulphate and boric acid spray on vegetative growth and yield of winter season crop of guava (*Psidium guajava* L.) cv. Pant Prabhat. In: *Souvenir, Ambedkar Jayanti National Seminar on Sustainable Horticultural Research in India: Perspective, Priorities and Preparedness*, 14-15<sup>th</sup> April 2008, Vidya Vihar, Rae Bareli Road, Lucknow-226 025, p. 31.
10. Kumar, P., Maurya, R., **Chakraborty, B.**, Mishra, D.S. and Mer, R. (2011). Predicting economic parts of gladiolus for harnessing better profit. In: *Abstract, National Conference on Horti-Business- Linking Farmers with Market*, 28-31 May, 2011, Dehradun, Uttarakhand, p. 85-86.
11. **Chakraborty, B.**, Kumar, S. Banerjee, T. and Kumar, P. (2011). An alternative approach of ambient air quality management through ornamental plants. In: *Abstract, International Conference on Issues for Climate Change, Land Use Diversification and Biotechnological Tools for Livelihood Security* 8-10 Oct., 2011, SVPUA&T, Merrut, Uttar Pradesh p. 312.

## Technical Documents

1. Book Chapter: “*Phuloo ki Sanrakshhit Kheti*” by Santosh Kumar, **Binayak Chakraborty** and Rakesh Mer in “*Kharif Phasoloutpadan Tatha Sabji Ebam Phulo Ki Sanrakshhit Kheti*”. Published by Directorate of Extension Education, G.B.P.U.A.&T., Pantnagar-263 145, US Nagar (UK) 69-97.
2. Book Chapter: “*Pushpo Utpadan Adhik Aye Hetu Bikalp*” by Santosh Kumar, **Binayak Chakraborty** and Rakesh Mer in “*Pantnagar Kishan Diary*”. Published by Directorate of Extension Education, G.B.P.U.A.&T., Pantnagar-263 145, US Nagar (UK) 115-119.

## Extension Publication

1. Kumar, S. and **Chakraborty, B.** 2013. “*Gainda-Pushp Ebom Beej Utpadan Takneek*”. Published by Directorate of Extension Education, G.B.P.U.A.&T., Pantnagar-263 145, US Nagar (UK) 15 p.
2. Kumar, S., Singh, C.P., **Chakraborty, B.** and Dhama, V. 2013. *Gulab Ki Sanrakshhit Khetii*. Published by Directorate of Extension Education, G.B.P.U.A.&T., Pantnagar-263 145, US Nagar (UK) 18 p.

## Book Chapters

1. Bhowmick, N. and **Chakraborty, B.** 2015. Burmese Grape (*Baccaurea sapida* Muell. Arg.). pp. 21-26. In: S.N. Ghosh (ed.) Breeding of Underutilized Fruit Crops: PART-I. Jaya Publishing House, Delhi- 110 095 (INDIA).
2. **Chakraborty, B.** and Mishra, D.S. 2015. Dragon Fruit (*Hylocereus sp.*). pp. 97-112. In: S.N. Ghosh (ed.) Breeding of Underutilized Fruit Crops: PART-I. Jaya Publishing House, Delhi- 110 095 (INDIA).
3. **Chakraborty, B.**, Mishra, D.S., Hazarika, B.N. and Hazarika, T.K. 2015. Durian (*Durio zibethinus*). pp. 115-131. In: S.N. Ghosh (ed.) Breeding of Underutilized Fruit Crops: PART-I. Jaya Publishing House, Delhi- 110 095 (INDIA).
4. Mishra, D.S., **Chakraborty, B.**, Rymbai, H., Deshmukh, N.A., Jha, A.K., War, G.F., Paul, D., Patel, R.S. Mishra, L.K., Roy, D. and Lyngdoh, P. 2015. Longan (*Dimocarpus longan* Lour.). pp. 255-278. . In: S.N. Ghosh (ed.) Breeding of Underutilized Fruit Crops: PART-II. Jaya Publishing House, Delhi- 110 095 (INDIA).
5. Mishra, D.S., **Chakraborty, B.**, Kumar, R. 2015. Loquat (*Eriobotrya japonica* Lindl.). pp. 281-303. . In: S.N. Ghosh (ed.) Breeding of Underutilized Fruit Crops: PART-II. Jaya Publishing House, Delhi- 110 095 (INDIA).
6. **Chakraborty, B.**, D.S. Mishra, Hazarika, B.N., Hazarika, T.K. and Ghosh, S.N. 2015. Rambutan (*Nephelium lappaceum*). pp. 425-439. In: S.N. Ghosh (ed.) Breeding of Underutilized Fruit Crops: PART-II. Jaya Publishing House, Delhi- 110 095 (INDIA).
7. **Chakraborty, B.** and D.S. Mishra. 2015. Rose Apple [*Syzygium jambos* (L.) Alston] pp. 441-445. In: S.N. Ghosh (ed.) Breeding of Underutilized Fruit Crops: PART-II. Jaya Publishing House, Delhi- 110 095 (INDIA).
8. **Chakraborty, B.** and D.S. Mishra. 2015. Wax Apple [*Syzygium samarangense* (Blume) Merr. and L.M. Perry syns. *S. javanicum* Miq.] pp. 521-533. In: S.N. Ghosh (ed.) Breeding of Underutilized Fruit Crops: PART-II. Jaya Publishing House, Delhi- 110 095 (INDIA).
9. **Chakraborty, B.** 2016. Indian Persimmon [*Diospyros peregrina* (Geartn.) Gürke] pp. 511-518. In: S.N. Ghosh, A. Singh and A. Thakur (eds.) Underutilized Fruit Crops: Importance and Cultivation: PART-I. Jaya Publishing House, Delhi- 110 095 (INDIA).
10. **Chakraborty, B.** 2016. Velvet apple (*Diospyros blancoi* A. DC.). pp. 1339-1344. In: S.N. Ghosh, A. Singh and A. Thakur (eds.) Underutilized Fruit Crops: Importance and Cultivation: PART-II. Jaya Publishing House, Delhi- 110 095 (INDIA).

11. Mishra, D.S., **Chakraborty, B.**, Nimbolkar, P.K. and Bajeli, J. 2016. Loquat (*Eriobotrya japonica* Lindl). pp. 749-784. In: S.N. Ghosh, A. Singh and A. Thakur (eds.) Underutilized Fruit Crops: Importance and Cultivation: PART-II. Jaya Publishing House, Delhi- 110 095 (INDIA).
12. **Chakraborty, B.**, Chakraborty, K. and Bhaduri, D. 2016. An insight of iron chlorosis in horticultural crops: physiological and molecular basis, and possible management strategies. In: A. Hemantaranjan (ed.) Advances in Plant Physiology, Vol. 16. Scientific Publisher, Jodhpur, Rajasthan (INDIA).

### **Laboratory Manual**

1. **Chakraborty, B.** 2015. Practical Manual: Production Technology of Spices, Medicinal, Aromatic and Plantation Crops . Funded by ICAR
2. **Chakraborty, B.** and Aklade, S.A. 2015. Practical Manual: Production Technology of Fruit Crops. Funded by ICAR

### **Other Information**

#### **Delivered lectures on scientific and technical knowledge regarding cultivation of horticultural crops at farmers level**

1. Delivered lecture on “Horticultural Status of Dang District of Gujarat” at Awha (Head quarter of Dang District) on 18-12-2014 on the occasion of “Rabi Krushi Mohotsav-2014” organized by State Govt. of Gujarat. Ref. Letter Number NAU/KVK/B.2/2239-41/2014 Dated 11-12-2014
2. Delivered lecture on “Organic Farming in Horticultural Crops” at KVK, Waghai on 03-02-2015 on the occasion of “Technology Week”. Ref. Letter No. NAU/KVK/K-3/95-96/2015 Dated 28-01-2015
3. Participated in Krushi Mohotsav-2015 and delivered technical and scientific package of practices in horticultural crops during 22/04/2015-28/04/2015 Ref. Letter No. NAU/DEE/D-1/1677-1907/2015 Navsari Dated 13-04-2015
4. Participated in Rabi Krushi Mohotsav-2016 and delivered technical and scientific package of practices in horticultural crops during 31/12/2015-01/01/2016 Ref. Letter No. NAU/DEE/D-1/WEB-58/2015 Navsari Dated 18-12-2015
5. Delivered lecture on “PHT and Value Addition in Fruits and Vegetables” at KVK, Waghai on 30-12-2015 on the occasion of In-service Training programme For Extension Functionaries on Hi-tech Horticulture Technologies.
6. Delivered lecture on “Mulching Technology in Horticultural Crops” at KVK, Waghai on 19-01-2015 on the occasion of “Technology Week”. Ref. Letter No. NAU/KVK/K-3/94-98/20156 Dated 12-01-2016
7. Delivered lecture on “Hi-Tech Horticulture” at Chikar (Jawda), Waghai, Dist. Dangs on 10-02-2016 organised by District Horticulture Department, Awha, Dangs. Ref. Letter No. ADH/Hort./165-68/2016 Dated 08-02-2016
8. Delivered lecture on “Protected Cultivation of Exotic Vegetables” at KVK, Waghai on 04-10-2016 on the occasion of on campus training programme for farmers and FW on the topic Greenhouse Technology and Plug Tray Nursery. Ref. Letter No. NAU/KVK/K-3/1374/2016 Dated 29-09-2016