

Resume of Dr R K Patel



1. Personal Details

Name	:	R.K. Patel
Designation & Discipline	:	Sr Scientist, Horticulture (Fruit Science)
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2. Qualifications (Highest degree)

Degree	Year	Institute	Subject (Specialization)
Ph.D.	2012	Nagaland University, Lumami, Nagaland	Horticulture, Pomology
M.Sc.	1996	IGKVV, Raipur, CG	Horticulture
B. Sc.	1994	IGKVV, Raipur, CG	Agriculture

3. Research Projects (handled)

Details such as Title, PI/Co-PI, Allocation, Duration etc.	Salient accomplishment
Institute Project	
Collection, evaluation and improvement of Khasi mandarin and lemon (PI) Duration: 6 years (2003-2009)	<ul style="list-style-type: none"> • Tissue cultured and grafted plants of Khasi mandarin five years old were evaluated for their growth, yield and quality attributes. Maximum plant height (254 cm) and rootstock diameter (4.81 cm) was recorded under grafted plant on <i>C. reshni</i> rootstock. • Physico-chemical attributes of grafted plant of Khasi mandarin fruits reveals that maximum fruit weight (109 g), fruit length (5.5 mm), fruit dia. (6.1 mm), specific gravity (0.95), TSS (9.08%) and 'β' carotene (1.81 mg/100 ml) was recorded under <i>C. taiwanica</i> rootstock.
Standardization of agro techniques for yield optimization of citrus (PI) Duration: 9 years (2003-2013)	<ul style="list-style-type: none"> • Potting mixture with combination of 1 part soil + 2 part sand + 1 part FYM gave the maximum seedling growth of Khasi mandarin. • Nursery raising techniques of Khasi mandarin has been standardized under polyhouse condition. • Propagation of Khasi mandarin through soft wood grafting has been standardized. • Intercropping of leguminous crops i.e French bean, soybean, urd bean, cowpea, rice bean with Khasi mandarin has been standardized. • Black polythene mulch has been found effective for minimizing the weed density in basin area of Khasi mandarin, while <i>Crotolaria tetragona</i>, <i>Tefrosia candida</i> mulches have been found better for plant growth.
Domestication and improvement of potential underutilized fruit crops (PI) Duration: 6 years (2006-2013)	<ul style="list-style-type: none"> ▪ Maximum germination (80 %) was recorded in sohiong seed treated with GA3 @ 100 ppm, whereas rest of the treatments showed the 64 % germination. ▪ The maximum graft success (80%) was recorded under open and polyhouse condition through wedge grafting and in net house condition through tongue grafting. ▪ Physical and biochemical studies of different genotypes of <i>Sohiong</i> fruit have been done. ▪ Nutrient analysis of two genotypes (bigger & smaller size) of <i>Sohiong</i> fruit has been done. ▪ Plant growth performance of grafted and seedling plant of <i>Sohiong</i> at two year of planting recorded better plant growth performance in grafted plant than seedling except plant height. ▪ Physical and bio-chemical profiling of <i>Sohshang</i> fruit done.
Improvement of guava, peach, passion fruit, kiwifruit, aonla etc (CO-PI) Duration: 6 years (2003-2009)	<ul style="list-style-type: none"> • Growth performance, flowering and fruiting behavior of passion fruit genotypes/species studied. • Physico-chemical attributes of passion fruit showed the great variation in their fruit weight, size, juice % and quality traits like TSS, acidity, ascorbic acid, sugars and 'β' carotene due to genotypes of different species. • Evaluation of peach for their yield and quality characters revealed that

	<p>cultivar Flordasun out performed TA-170 and Shan-e-Punjab with respect to productivity (28.67 kg/tree).</p> <ul style="list-style-type: none"> • Among four cultivars of kiwifruit Abott recorded the highest fruit weight (61.99 g), fruit length (58.79 mm) and TSS (13.88%) at mid altitude of Meghalaya.
<p>Introduction, evaluation and development of suitable agro techniques for strawberry cultivation suitable for mid hills of Meghalaya (CO-PI) Duration: 4 years (2005-2009)</p>	<ul style="list-style-type: none"> • Cultivars Camarosa, Ofra, Festival and Sweet Charlie are recommended for commercial cultivation in the region. • Maximum number of runners may obtain with the application of GA₃, 40ppm in the last week of May. • Planting between 15th to 30th September under black polythene mulch is ideal for strawberry in the region. • Fruits can be produced 30-35 days earlier than normal period, when planted in low tunnels of 50% shade net in the month of July or August and period of fruit availability may be extended to 47 days from normal when planted in the month of November under UVS polythene tunnels.
<p>Standardizing of the protocols for production of value added products from jack fruits (CO-PI) Duration: 3 years (2010 to 2013)</p>	<ul style="list-style-type: none"> • Standardized protocols for production of ready-to-cook (RTC) green jack fruits slices in brine solution. • Optimized jack fruit jam, jackfruit-pineapple blended beverages, RTS and leather from ripen fruits. • Developed jackfruit seeds flour and used as thickening agent in different food products (viz. sauce).
<p>Productivity maximization and quality improvement of guava and peach (CO-PI up to July 2013) Duration: 4 years (2010-2014)</p>	<ul style="list-style-type: none"> • Meadow orcharding in guava showed the promising results. ▪ Rejuvenation techniques of senile orchard of peach have been standardized.
Externally Funded Projects: 5 Nos.	
<p>Horticulture Mission for NE states and Himalayan States (Scientist Associated up to July 2013). 650 lakh Duration: 10 years (2003-2013)</p>	<ul style="list-style-type: none"> • Rejuvenation techniques of declining Khasi mandarin orchards. • Quality planting material of citrus, peach, guava, passion fruit etc.
<p>Finalizing Crop Specific DUS Testing Guidelines for Citrus (<i>C. reticulata</i>, <i>C. sinensis</i> and <i>C. aurantifolia</i>.) (PI). 14.02 lakh Duration: 3 years (April, 2010-March 2013)</p>	<ul style="list-style-type: none"> • Developed the DUS character of Khasi mandarin and Assam lemon
<p>Biotechnology led organic farming in NE Region (PI from Aug. 2011 till July 2013). 60 lakh Duration: 3 years (2010-2013),</p>	<ul style="list-style-type: none"> • Organically grown turmeric showed more dry matter content, curcumin and oleoresin content than conventional. • Similarly, ginger grown under organic practices recorded less fibre and high dry matter and oleoresin content than conventional method.
<p>Climate resilience based production management of citrus (NICRA). 125 lakh (PI up to July, 2013) Duration: 3 years (Dec 2011- March 2014)</p>	<ul style="list-style-type: none"> • Fruit growth pattern and changes in physico-chemical parameters of Khasi mandarin at various locations of Meghalaya has been studied in context to climate change.
<p>AICRP on floriculture (Co-PI from 2009 till</p>	<ul style="list-style-type: none"> • Growing of gerbera hybrids under low cost

July 2013). 080 lakh annually	polyhouse for year round production has been standardized.
Development of National Database on Mango (PI upto July 2013). 27.58 lakh Duration: 5 years (2012-2017)	Work on mango was initiated
Research Project (ongoing)	
Development of sustainable production techniques in litchi (Co-PI)	▪ Establishment of litchi orchard through organic means has been initiated
Investigation and management of insect pests complex in litchi (Co-PI)	▪ Seasonal incidence of insect pest in litchi crop is in progress.

4. Publications (Important research publications)

Research Papers- 39 Nos.

1. Agrawal, Shailendra; **Patel, R.K.** and Pandey, S.D. (1998). Influence of higher levels of nitrogen and potassium on growth and yield potential of *in vitro* banana (cv. Robusta). *Mysore J. Agric. Sci.* 32: 275-280.
2. **Patel, R.K.**; Pandey, S.D. and Agrawal, S. (1999). Studies on the effect of varying doses of nitrogen and potassium with splitting of NPK on fruit characters on *in vitro* banana cv. Dwarf Cavendish as first ratoon crop. *The Orissa J. of Hort.* Vol.27 (2): 48-52.
3. **Patel, R.K.**; S. Agrawal and Pandey, S.D. (1999). Effect of split application of NPK with varying levels of nitrogen and potassium on bunch characters on *in vitro* banana cv. Dwarf Cavendish as first ratoon crop. *South Ind. Hort.* 47 (1-6): 162-163.
4. Rai, N., Yadav, D.S., Yadav, R.K. and **Patel, R.K.** (2001). Variability, correlation and path coefficient analysis in between seed morphology and seedling growth in French bean. *J. Assam Sc. Soc.*, Vol. 42: 40-43 pp.
5. Puri, Sunil, Agrawal, S., **Patel, R. K.** and Swamy, S. L. (2001). Germination and viability testing of some multipurpose trees used in Agroforestry practices. *Indian J. Agroforestry* Vol. 1: 69-79.
6. Dubey, A.K., Nath, A., **Patel, R.K.**, Babu, K.D. and Yadav, D.S. (2002). Standardization of maturity indices of Kinnow under Meghalaya condition. *Progressive Horticulture*, vol. 34 (1): 119-122.
7. Dubey, A.K., Yadav, D.S. and **Patel, R.K.** (2002). Studies on the softwood grafting in Khasi mandarin (*Citrus reticulata* Blanco). *Indian J. Citriculture*, 1 (2): 109-112.
8. Dubey, A.K., **Patel, R.K.** and Singh, A. K. (2003). Standardization of fruit maturity indices in Khasi mandarin (*Citrus reticulata* Blanco) under Meghalaya. *Ann. Agric. Res. New Series*, Vol. 24 (3): 5-8.
9. Dubey, A.K., Singh, A. K., Yadav, D. S. and **Patel, R.K.** and (2003). Seed germination in citrus species as affected by storage of seeds within the fruits. *Indian J. Plant Physiol.*: 226-230 pp.
10. Yadav, D.S., **Patel, R.K.**, Rai, N. and Dubey, A.K. (2003). Physico-chemical status and yield of declined Khasi mandarin orchards in Meghalaya. *Agric. Sci. Digest*, 23 (1): 71-72.
11. Dubey, A.K., **Patel, R.K.** and Singh, A. K. (2003). Performance of citrus (*Citrus* species) and hybrids in nursery at mid-altitude of Khasi hills of Meghalaya. *Indian Journal of Agricultural Sciences*, 74 (10): 552-554.
12. Dubey, A.K., **Patel, R.K.** and Yadav, D.S. (2004). Studies on bare root transplanting of Khasi mandarin (*Citrus reticulata* Blanco) under mid altitude of Meghalaya. *The Orissa Journal of Horticulture*, Vol. 32 (1): 55-57.

13. **Patel, R.K.**, Yadav, D.S., Yadav, R.M. and Patel, K.K. (2005). Performance of patch budding on different cultivars of guava under mid hill altitude of Meghalaya. *The Orissa J. of Horticulture*, Vol. 33 (1): 1-3 pp.
14. Yadav, D.S., Rai, N, B. Dey, **Patel, R.K.** and Singh, S. (2005). Effect of spacing on growth and yield of pineapple planted on terraced land and across the hill slope. *The Orissa J. of Horticulture*, Vol. 33 (1): 27-30 pp.
15. Rai, N., **Patel, R.K.**, Yadav, D.S. and Asati, B. S. (2004). Effect of PGR on growth, flowering and yield of French bean Cv. Meghalaya Local. *Veg. Sci.*, 31 (1): 95-97.
16. Rai, N., Yadav, D.S., Patel, K. K. and **Patel, R.K.** (2005). Effect of position of flower clusters on yield and quality of tomato hybrids. *Haryana J. Hort. Sci.*, 34 (3-4): 310-312.
17. Rai, N., Yadav, D.S., Patel, K. K. and **Patel, R.K.** (2005). Studies on shelf life of capsicum grown under protected and open conditions. *Haryana J. Hort. Sci.*, 34 (3-4): 313-315.
18. Yadav, D.S., Rai, N, B. Dey, **Patel, R.K.** and Singh, S. (2005). Effect of spacing on growth and yield of pineapple planted on terraced land and across the hill slope. *The Orissa Journal. of Horticulture*, Vol. 33 (1): 27-30 pp.
19. Singh, Akath, **Patel, R. K.**, Babu, K. D. and Bhuyan, Mousumi (2006). Flowering, Fruiting and ripening physiology of passion fruit. *Environment & Ecology*, 24 S (3): 693-697.
20. **Patel, R.K.**, Yadav, D.S., and Yadav, R.M. (2005). Physico-chemical studies of kiwi cultivars under mid hill situation of Meghalaya. *Ind. J. of Hill Farming*, 18 (1&2): 165-168.
21. **Patel, R.K.**, Babu, K.D., Singh, Akath and Yadav, D.S. (2007). Performance of low chilling Peach cultivars under mid hills of Meghalaya, Physico-chemical studies of kiwi cultivars under mid hill situation of Meghalaya. *Environment and Ecology*, 25 (1): 229-231.
22. Singh, Akath, Yadav, D. S., **Patel, R. K.** and Mousumi Bhuyan (2007). Effect of shelf-life and quality of passion fruit with polyethylene packaging under specific temperature, *J. food Sci. Technol.* 44 (2): 201-204.
23. **Patel, R.K.**, Singh, Akath, De, L. C., Patel, R.S., Yadav, R.M., Buragohain, Juri and Bhuyan, Mousumi (2007). Tree health, growth, yield and fruit quality attributes of some citrus species/types at mid altitude of Khasi hill of Meghalaya. *International journal of Tropical Agriculture*, 25 (4): 927-932.
24. **Patel, R.K.**, Babu, K.D., Singh, Akath, Yadav, D.S. and De, L. C. (2007). Soft wood grafting in mandarin (*C. reticulata* Blanco): A novel vegetative propagation technique. *International Journal of fruit Science*, 7 (2): 31-41.
25. Babu, K.D., Ram Chandra, De L.C., Paul, D., Singh Akath and **Patel, R.K.** (2007). Evaluation of guava selections for productivity and quality traits. *International journal of Tropical Agriculture*, 25 (1-2): 84-87.
26. Singh, Akath, **Patel, R. K.**, De, L. C. and Pereira, Lolly S. (2008). Performance of strawberry (*Fragaria x ananassa*) cultivars under sub-tropics of Meghalaya, *Ind. J. Agri, Sci.* 78 (6): 575-580.
27. Singh, Akath, **Patel, R. K.**, De, L. C. and Babu, K.D. (2008). Effect of cutting types, indol butyric acid treatment and shoot pinching on rooting of kiwifruit (*Actinidia deliciosa*). *Ind. J. Agri, Sci.* 78 (7): 695-698.
28. **Patel, R.K.**, Singh, Akath, Yadav, D.S., Bhuyan, Mousumi and Deka, Bidyut. C. (2009). Waxing, lining and polyethylene packaging on the shelf-life and juice quality of passion fruit during storage. *Journal of Food Science and Technology* 46 (1), 70-74.
29. Baiswar, P., Chandra, S, **Patel, R.K.** and Ngachan, S.V. (2009). First report of powdery mildew on *Prunus nepalensis* in India. *Australian Plant Disease Notes*, 4: 131-132.
30. K. Dhinesh Babu, L.C. De, **R. K. Patel** and Akath Singh (2009). Genotypic amenability of guava for patch budding. *Indian J. Hort.* 66 (2): 264-266.

31. **Patel, R.K.**, Babu, K.D., Singh, Akath, Yadav, D.S. and De, L. C. (2010). Soft wood grafting in mandarin (*C. reticulata* Blanco): A novel vegetative propagation technique. *International Journal of fruit Science*, 10 (1): 54-64.
32. **Patel, R.K.**, Maiti, C.S. Deka, Bidyut C., Deshmukh, N.A. and Roy, D. (2011). Variability Studies in Guava (*Psidium guajava* L.) Genotypes for Growth, Yield and Quality Attributes at mid-hills of Meghalaya. *Indian J Hill Farming*, 24(1&2) 24-28.
33. Nath A, Deka Bidyut C, Singh, Akath and **Patel, R. K.** (2011). Extension of shelf life of pear fruits using different packaging materials. *Journal of Food Science and Technology*, 49(5), 556-563.
34. Nath, A., Swer, T.L., Deka, Bidyut C. and **Patel, R.K.** (2011). Nutritional status and value addition in Sohshang fruit (*Elaeagnus latifolia*). *Beverage & Food World*, 38(12): 46-47.
35. Singh Akath, Singh B K, Deka B C, Sanwal S K, **Patel R K** and Verma M R (2011). The genetic variability, inheritance and inter-relationships of ascorbic acid, β -carotene, phenol and anthocyanin content in strawberry (*Fragaria* \times *ananassa* Duch.). *Scientia Horticulturae*. **129**: 86–90.
36. Singh Akath, Yadav D S, **Patel R K**, Nath Amit and Bhuyan, Mousumi (2011). Wax coating and padding materials influence quality and shelf-life of purple passion fruit during storage. *Indian Journal of Horticulture*. **68** (2): 246-249.
37. Singh Akath, Deka, B.C., **Patel, R.K.**, Nath, A., and Mulieh, S.R. (2012). Effect of pruning time, severity and tree aspects on harvesting period and fruit quality of low chilling peach (*Prunus persica*). *Indian Journal of Agricultural Sciences*, 82(10): 862-868.
38. Deka, Bidyut C., Thirugnanavel, A., **Patel, R.K.**, Nath, Amit and Deshmukh, Nishant. (2012). Horticultural diversity in North-East India and its improvement for value addition. *Indian Journal of Genetics and Plant Breeding*, 72(2): 157-167.
39. Singh, Akath, Syndor, Agreesia, Deka, Bidyut C., Singh, R.K. and **Patel, R.K.** (2012). The effect of microclimate inside low tunnels on off-season production of strawberry (*Fragaria* \times *ananassa* Duch.). *Scientia Horticulturae*, 144: 36-41.

Lead Lecture in Seminar/Symposia: 3

1. Ngachan, S.V., Roy, S.S., Sharma, P.K., Patel, R.K. and Prakash, N. (2010). Citrus Scenario in North Eastern India: Issues and Strategies, In Souvenir & Abstracts of National Seminar on Citrus Biodiversity for Livelihood and Nutritional security organized by NRC for Citrus, Nagpur from 04-05, Oct., 2010.
2. Singh, I.P., Jagtap, D.D. and Patel, R.K. (2010). Exploiting citrus genetic diversity for improvement and livelihood, In Souvenir & Abstracts of National Seminar on Citrus Biodiversity for Livelihood and Nutritional security organized by NRC for Citrus, Nagpur from 04-05, Oct., 2010.
3. Arora R K, Sonkar R K, Kaul M K and Patel R K 2012. Rootstocks in citrus: Chronological development. In *Souvenir & Abstracts of National dialogue on citrus improvement, production and utilization held at NRC for Citrus Nagpur from 27-29th February, 2012*. pp 130-148.

Popular Articles: 25 Nos.

1. Rai, N., Asati, B. S., Patel, **R. K.**, **Patel, K. K.** and Yadav, D. S. (2005). Underutilized Horticultural crops in North Eastern region, *Envis Bulletin, Himalayan Ecology*, 13 (1): 16-26.
2. **Patel, R. K.** and De, L.C. (2006). Soh-phie (*Myrica* species) - An unexploited fruit of the future for Meghalaya, *Envis Bulletin, Himalayan Ecology*, 14 (1): 32-34.
3. Singh, Akath, Babu, K.D., **Patel, R.K.** and Barua, Utpal. (2006). Temperate fruits: Gaining momentum in subtropical areas of Northeast, *Envis Bulletin, Himalayan Ecology*, 14 (1): 35-39.
4. Singh, Akath, **Patel, R.K.** and Yadav, D. S. (2007). Post harvest management and marketing fruits, *Agriculture Update*, 2(1): 4-5.
5. **R. K. Patel**, Singh, Akath, Yadav, R.K., Sharma, Y.P. and De, L.C. (2008). Enjoying sohiong an unexploited fruit in Meghalaya. *Indian Horticulture*, July-Aug. pp 47-48.
6. **R. K. Patel**, Bidyut C. Deka and Akath, Singh (2008). Guava cultivation: Boon for North East

farmers. Horticulture Newsletter vol 2 & 3, published by the Horticulture Society of North East India, pp 4-5.

7. Yadav, R.K., Yadav, D.S., Deka, Bidyut C., Sanwal, S.K., Jha, A.K., Verma, V.K., **Patel, R.K.** and Nath, Amit. (2012). Megha Tomato-3: New Tomato Variety. *Indian Horticulture*, 57(6):34-36.

Book: 2 No.

R. K. Patel, Akath Singh, B.C. Deka and S. V. Ngachan. 2008. *Handbook of fruit production*. Published by the Director, ICAR Research Complex for NEH Region, Umiam-Meghalaya.

Bidyut C. Deka, Amit Nath, A.K.Jha, **R.K. Patel**, R.K.Yadav, Akath Singh, Rajiv Kumar and S.V. Ngachan. 2010. Package of Practices for Horticultural crops of NEH Region. Published by the Director, ICAR Research Complex for NEH Region, Umiam-Meghalaya.

Bulletin: 5 Nos.

1. Citrus rejuvenation packages in North East India (2006): De, L.C., Bujarbaruah, K.M., Yadav, D.S., Sharma, Y.P., **Patel, R.K.**, Yadav, R.K. and Shylesha, A.N. published by the Director, ICAR Research Complex for NEH Region, Umiam (Meghalaya).
2. Chhattisgarh ki Pramukh: Beejon Se Tel Pradan Karane Valli Vriksha Prajatinya, Swamy, S.L.; **Patel, R.K.**; Jaisawal, A.K.; Yadav, Shyam Bihari and Puri, Sunil (2000). Published by Deptt. of Forestry, IGAU, Raipur.
3. Adhunik Van Nursery: Ayojan aonm Prabandhan. Swamy, S.L.; Puri, Sunil,; **Patel, R.K.**; Williams, A.J.; Jaisawal, A.K. and Gangully, Jayalaxmi (2000). Published by Deptt. of Forestry, IGAU, Raipur.
4. Roy, S.S, Sharma, P.K., **Patel, R.K.**, Sahoo, M.R., Kumar, D. Punitha, P. and Prakash, N. (2012). Production manual of passion fruit for North Eastern Region. Technology Bulletin No. RCM (TB)-03, Joint Director, ICAR Research Complex for NEH Region, Manipur Centre, Imphal. pp 44.
5. Patel R K, Deka Bidyut C, Babu K D, Singh Akath, Deshmukh, N A, Nath A, Cghandra Ram, Patel R S and Ngachan, S V (2011). Guava: Production technology. Technical Bulletin, No 73 Published by Director, ICAR research Complex for NEH region, Umiam. p28.

Leaflets/folder: 9 Nos.

1. Khasi mandarin cultivation: Package of practices for higher production (2005). Yadav, D.S., Dey, Bishwajeet, **Patel, R. K.**, and Rai, N. Published by the Director, ICAR Research Complex for NEH Region, Umiam (Meghalaya).
2. Pineapple cultivation: Package of practices for higher production (2005). Yadav, D.S., Dey, Bishwajeet, **Patel, R. K.**, and Rai, N. Published by the Director, ICAR Research Complex for NEH Region, Umiam (Meghalaya).
3. Passion fruit cultivation: Package of practices for higher production (2005). Yadav, D.S., **Patel, R. K.**, Babu, K.D., Singh, Akath and Yadav, R.M. Published by the Director, ICAR Research Complex for NEH Region, Umiam (Meghalaya).
4. Peach: Package of practices for higher production (2009). Singh, Akath, Deka, Bidyut, C., **Patel, R. K.**, Nath, Amit and and Mulieh, S. R. Published by the Director, ICAR Research Complex for NEH Region, Umiam (Meghalaya).
5. Gladiolous (2010). Kumar, Rajiv, Deka, Bidyut, C., **Patel, R. K.** Published by the Director, ICAR Research Complex for NEH Region, Umiam (Meghalaya).
6. Grafting in sohiong: A novel multiplication technique (2011). **Patel, R. K.**, Deka, Bidyut, C. and Deshmukh, N.A. Published by the Director, ICAR Research Complex for NEH Region, Umiam (Meghalaya).
7. Guava: package of practices (2011). **R. K. Patel**, N. A. Deshmukh, R. S. Patel, A. Nath and

Bidyut C. Deka. Published by the Director, ICAR Research Complex for NEH Region, Umiam (Meghalaya).

8. Strawberry: package of practices for cultivation in Meghalaya (2011). Akath Singh, **R.K. Patel**, N. A. Deshmukh, Rikadakini Lamare & Bidyut C. Deka. Published by the Director, ICAR Research Complex for NEH Region, Umiam (Meghalaya).
9. Aam Ke Aam Guthuliyon Ke Daam. (2000). **Patel, R.K.**; Verma, Satish and Puri, Sunil, Published by Deptt. of Forestry, IGAU, Raipur (CG).

Book chapter: 17 Nos.

1. Singh, Akath, **Patel, R.K.** Babu, K.D., and De, L.C. (2007). Low Chilling peaches. Underutilized and underexploited horticultural crop, edited by K.V. Peter, Vol. 2, 89-103.
2. **Patel, R.K.**, Singh, Akath, Yadav, D.S. and De, L.C. (2008). Underutilized fruits of North eastern region, India. *Underutilized and Under exploited Horticultural crops*, Vol.4 edited by K.V. Peter, New India Publishing Agency, New Delhi, 223-238.
3. **Patel, R.K.**, Singh, Akath, Patel, R. S., Deka, Bidyut, C. and Ngachan, S. V. (2010). Underutilized fruits of North eastern region of India- An unexplored potential. Sustainable Hill Agriculture edited by N. Prakash *et al.*, Today & Tomorrow's Printers and Publishers, New Delhi, 313-322.
4. Singh, Akath, **Patel, R. K.**, Deka, Bidyut, C. and Patel, R. S. (2010). High value fruits of economic and nutritional security in hilly areas of North East. Sustainable Hill Agriculture edited by N. Prakash *et al.*, Today & Tomorrow's Printers and Publishers, New Delhi, 323-331.
5. **Patel, R.K.**, De, L.C., Singh, Akath and Deka, Bidyut, C. (2010). Lesser known edible fruits of North eastern India. *Underutilized & Underexploited Horticultural Crops Vol 5* edited by K.V. Peter, New India Publishing Agency (NIPA), New Delhi.
6. Singh I P, Jagtap D D and **Patel R K** (2012). Exploiting citrus genetic diversity for improvement and livelihood, In: Shivankar, V.J. and Singh, I.P. (eds). *Citrus Biodiversity*. Indian Society of Citriculture (ISC), Nagpur, Maharashtra. pp 41 - 58.
7. **Patel R K**, Singh Akath, Deka Bidyut C, Patel R S and Ngachan S V (2012). Performance of nucellar, tissue cultured and grafted plants of Khasi mandarin under Sub-tropics of Meghalaya. In: Shivankar, V.J. and Singh, I.P. (eds). *Citrus Biodiversity*. Indian Society of Citriculture (ISC), Nagpur, Maharashtra. pp 119-122.
8. **Patel R K**, Deka Bidyut C, Patel R S, Singh S and Lamare Rikadakini (2012). Studies on intercropping and mulching in Khasi mandarin. In: Shivankar, V.J. and Singh, I.P. (eds). *Citrus Biodiversity*. Indian Society of Citriculture (ISC), Nagpur, Maharashtra. pp 304-306.
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5. Important Research Contributions in Brief

- **Standardized the soft wood grafting in Khasi mandarin:** A novel plant multiplication techniques through soft wood grafting has been developed to get higher graft success (>80%) as compared to exiting budding techniques which gave the success rate up to 50-55% depending upon the rootstocks (Appeared in ICAR DARE Report 2004).
- **Standardization of propagation techniques in Sohiong (*Prunus nepalensis*):** Propagation through wedge grafting during 2nd week of October and developed the protocol for raising the rootstock seedling first time.
- **Standardized the rejuvenation techniques of declining tree of orange, guava and peach:** Technology for rejuvenation of old and senile orchards of orange, guava and peach has been developed and demonstrated at farmers' field.
- **Horticulture based farming system:** Standardized the horticulture based farming system in 1.5 ha land with various components viz., fruits, vegetables, flowers and vermicompost for year round production and sustainable family income.

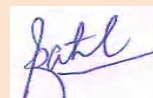
Developed/evolved 4 guava varieties i.e. RCG-11(IC No. 584677), RCGH-1(IC No. 584678), RCGH-4(IC No. 584679) and RCGH-7(IC No. 584680) and ready for release at Institute/state level and also included under AICRP trial.

6. Current area of Research

- Development of organic package of practices in litchi
- Canopy management of litchi
- Water management in litchi
- Litchi based farming system

7. Membership of Professional Societies

- Life member of Horticultural Society of India, New Delhi
- Life member of Indian Association of Hill Farming, Barapani, Meghalaya
- Life member of Society of Horticultural Research and Development, Chaubatia, Uttarakhand
- Life member of Bioscience & Agriculture advancement Society, Meerut



Signature of the Scientist