Personal Information

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Academics

Dr. Jayanta Layek, Sr. Scientist (Agronomy) in the Indian Institute of Agricultural Biotechnology, Ranchi has an excellent academic and research career. Dr. Jayanta Layek, born in Bankura, West Bengal and done his BSc (Ag) Hons. from PSB, Visva Bharati, West Bengal during 2002-2006. He has completed his MSc (Agronomy) in 2008 from Indian Agricultural Research Institute (IARI), New Delhi being topper of the university and got Gold Medal. He completed his PhD from IARI with Inspire fellowship from Department of Science & Technology, Govt. of India. He topped the ARS service and joined ICAR as a scientist on 27/04/2011 in NNARM, Hyderabad for FOCARS training and subsequently joined in ICAR Research Complex for NEH Region, Umiam, Meghalaya on 03/09/2011. He has joined ICAR-Indian Institute of Agricultural Biotechnology, Ranchi on 27th July 2023. Dr. Layek has undergone his one-year post-doctoral DBT fellowship under World Food Prize Laurate Dr. Rattan Lal, Ohio State University, USA during 2016-17. He has done his research service for conceptualizing and developing environmentally and socioeconomically viable technologies for conservation of natural resources, development of organic package of practices for various crops and integrated farming system (IFS) models etc. Dr. Layek has developed four technologies regarding organic farming, conservation agriculture and millet which were certified by ICAR during its 95th foundation day in July 2023. He worked as principal investigator (PI) of various projects line Network Project on organic farming, AICRP-Integrated farming System, Millet improvement project etc. Dr. Layek is also member of Academic Advisory Committee of Swayam Prabha, Channel-16, MHRD, Govt. of India and recorded 20 hours course each on "*Organic Farming*" & "*Farming System for Sustainable Development*" in IIT Kanpur for telecasting of high-quality educational programs. Dr. Layek has published more than 70 research papers in the journals of international and national repute with more than 2100 Google scholar citations, 6 books, 20 book chapters, 15 popular articles, 12 bulletins/manuals and 16 extension folders. Dr. Layek is actively engaged in various outreach activities and conducted more than 40 trainer/progressive farmers' trainings, 30 lectures in national and international forum, 20 field days, 4 National seminar/workshops, several farmers-scientists interaction programme etc. All these efforts directly benefitted several thousand farmers and stakeholders by improving their livelihood significantly.

Research Areas: Conservation agriculture, Organic Farming, Integrated Farming System, Crop Diversification, Biochar & carbon sequestration, Millet production

Professional Recognition/Awards

1. Biotechnology Overseas Associateship Fellowship for the Northeast Region: 2015-16 from Department of Biotechnology, Govt. of India for undergoing postdoctoral research training at

Carbon Management and Sequestration Centre, Ohio State University, Columbus, USA for one year.

2. Best Scientist of the Institute Award (ICAR Research Complex for NEH Region, Umiam) for the year 2020.
3. Received 'Best Centre of Network Project on Organic Farming' at 12th Annual Group Meeting on NPOF held on17-18th December, 2017 at ICAR-IIFSR, Modipuram, Meerut as PI and part of the team.
4. Best Innovative Young Scientist Award from 1st Farm Innovation Congress and National Conference on Innovative Farming for Food and Livelihood Security in Changing Climate at BCKV, West Bengal from Society of Agricultural Innovations (SAAI).
5. Young Scientist Award in 1st National conference on "Improving income of farmers through agriculture and allied sectors through development interventions" jointly organized by the Society of Krishi Vigyan and the Association of Aquaculturists, ICAR-Central Institute of Freshwater Aquaculture in Bhubaneswar, Odisha during 5th -7th January, 2017.

Best research paper/poster/oral paper award

1. Received IAHF Best Research Paper Award of Indian Association Hill Farming (IAHF) for the paper published in Indian Journal of Hill Faming Vol. 26 (1), Page 29-36. in National Seminar on Sustaining Hill Agriculture in Changing Climate on 5-7 Dec, 2015 at Pragna Bhawan, Agartala, Tripura
2. Best Research Paper award by Indian Association of Soil and Water Conservation (IASWC), Dehradun in year 2014

Recognitions

1. Got invitation from IIT, Kanpur and successfully developed and recorded 20 lectures (1 hour each) on different aspects of "Organic Farming" for telecasting of high-quality educational programs. This is under the programme of Swayam Parbha Direct to Home (DTH) project under Ministry of Human Resource Development (MHRD), Govt. of India
2. Got invitation from IIT, Kanpur and successfully developed and recorded 20 lectures (1 hour each) on ""Farming System for Sustainable Agriculture"" under the DTH project of MHRD, Govt. of India
3. Work on "IOFS" and its successful demonstration in villages of Meghalaya has been included in the "Compendium of Country Case Studies" in United Nations Climate Change Conference of the Parties (COP26)
4. Work on IFS and IOFS models demonstrated in farmers' field of Meghalaya has been published in the DARE-ICAR Significant Achievements 2019-21 & ICAR Twitter on 12 August, 2021

Technology Developed

1. Package of practices f organic farming of 33 crops for North Eastern Region of India
2. Integrated organic farming system (IOFS) for small and marginal farmers of North East India
3. Management of rice fallows of North Eastern Hill Region for enhancing system productivity"
4. Weed biochar as liming amendment for acidic soils of hill ecosystem

5. Millet production technology for climate resilient farming and nutritional security in North East India"
6. Organic package of buckwheat based cropping system for hill ecosystems of Meghalaya"
7. Integrated Farming System (IFS) models combining agri-horti-livestock enterprises to enhance the livelihood and food security of the hill habitants

Publications

A. Research Papers

1. Layek, J., Das, A., Ghosh, P.K., Rangappa, K., Lal, R., Idapuganti, R.G., Nath, C.P. and Dey, U., 2022. Double no-till and rice straw retention in terraced sloping lands improves water content, soil health and productivity of lentil in Himalayan foothills. *Soil and Tillage Research*, *221*, p.105381.
2. Layek, J., Rangappa, K., Das, A., Ansari, M.A., Choudhary, S., Rajbonshi, N., Patra, S., Kumar, A., Mishra, V.K., Ravisankar, N. and Kumar, S., 2023. Evaluation of millets for physio-chemical and root morphological traits suitable for resilient farming and nutritional security in Eastern Himalayas. *Frontiers in Nutrition*, 10: 1198023.
3. Layek, J., Das, A., Ansari, M.A., Mishra, V.K., Rangappa, K., Ravisankar, N., Patra, S., Baiswar, P., Ramesh, T., Hazarika, S. and Panwar, A.S., 2023. An integrated organic farming system: innovations for farm diversification, sustainability, and livelihood improvement of hill farmers. *Frontiers in Sustainable Food Systems,* 7, p.1151113.
4. Layek, J., Das, A., Ramkrushna, G.I., Krishnappa, R., Ghosh, P.K., Lal, R., Choudhury, B.U., Mohapatra, K.P., Babu, S., Yadav, G.S. and Dey, U., 2021. Managing rice fallow lands of the Eastern Indian Himalayas: Impacts of residue management and varietal interventions on soil properties, carbon stocks, and productivity. *Land Degradation & Development*, *32*(17), pp.4871-4888.
5. Layek, J., Dutta, S.K., Krishnappa, R., Das, A., Ghosh, A., Mishra, V.K., Panwar, A.S., Hazarika, S., Devi, S., Kumar, M. and Buragohain, J., 2023. Productivity, quality and profitability enhancement of French bean, okra and tomato with seaweed extract application under North-Eastern Himalayan condition. *Scientia Horticulturae*, *309*, p.111626.
6. Layek, J., Das, A., Ramkrushna, G.I., Sarkar, D., Ghosh, A., Zodape, S.T., Lal, R., Yadav, G.S., Panwar, A.S., Ngachan, S. and Meena, R.S., 2017. Seaweed extract as organic bio-stimulant improves productivity and quality of rice in eastern Himalayas. *Journal of Applied Phycology*, 30(1): 547-558.
7. Layek, J., Shivakumar, B.G., Rana, D.S., Munda, S., Lakshman, K., Das, A. and Ramkrushna, G.I., 2014. Soybean–cereal intercropping systems as influenced by nitrogen nutrition. *Agronomy Journal*, 106(6): 1933-1946.
8. Layek, J., Das, A., Mishra, V.K., Lal, R., Krishnappa, R., Hazarika, S., Mohapatra, K.P., Ansari, M.A., Pramanick, B., Kumar, M. and Ramkrushna, G.I., Improved agronomic practices and high yielding rice varieties maintain soil health and enhance yield and energy use efficiency under shifting cultivation landscapes of eastern Himalayas. *Land Degradation & Development*. https://doi.org/10.1002/ldr.4807
9. Das, A., Layek, J*, Ramkrushna, G.I., Krishnappa, R., Lal, R., Ghosh, P.K., Choudhury, B.U., Mandal, S., Ngangom, B., Dey, U. and Prakash, N., 2019. Effects of tillage and rice residue

management practices on lentil root architecture, productivity and soil properties in India's Lower Himalayas. *Soil and Tillage Research*, 194:104313.

10. Dutta, S.K., Layek, J*., Yadav, A., Das, S.K., Rymbai, H., Mandal, S., Sahana, N., Bhutia, T.L., Devi, E.L., Patel, V.B. and Laha, R., 2023. Improvement of rooting and growth in kiwifruit (Actinidia deliciosa) cuttings with organic biostimulants. *Heliyon*, *9*(7). e17815

11. Das, A., Lyngdoh, D., Ghosh, P.K., Lal, R., Layek, J.* and Ramkrushna, G.I., 2018. Tillage and cropping sequence effect on physico-chemical and biological properties of soil in Eastern Himalayas, India. *Soil and Tillage Research*, 180:182–193.

12. Das, S., Das, A., Idapuganti, R.G., Layek, J*., Thakuria, D., Sarkar, D., Bhupenchandra, I., Lal, R., Chowdhury, S., Babu, S. and Debbarma, K., 2023. Liming and micronutrient application improves soil properties and productivity of the groundnut-rapeseed cropping system in an acidic Inceptisol of India's eastern Himalayas. *Land Degradation & Development*. https://doi.org/10.1002/ldr.4713

13. Yadav, G.S., Lal, R., Meena, R.S., Datta, M., Babu, S., Das, A., Layek, J. and Saha, P., 2017. Energy budgeting for designing sustainable and environmentally clean/safer cropping systems for rainfed rice fallow lands in India. *Journal of Cleaner Production*, 158: 29-37.

14. Ngangom, B., Das, A., Lal, R., Ramkrushna, G.I., Layek, J., Basavaraj, S., Babu, S., Yadav, G.S. and Ghosh, P.K., 2020. Double mulching improves soil properties and productivity of maize-based cropping system in eastern Indian Himalayas. *International Soil and Water Conservation Research*, 8(3): 308-320.

15. Das, A., Patel, D.P., Lal, R., Kumar, M., Ramkrushna, G.I., Layek, J., Buragohain, J., Ngachan, S.V., Ghosh, P.K., Choudhury, B.U. and Mohapatra, K.P., 2016. Impact of fodder grasses and organic amendments on productivity and soil and crop quality in a subtropical region of eastern Himalayas, India. *Agriculture, Ecosystems & Environment*, 216: 274-282.

16. Das, A., Patel, D.P., Kumar, M., Ramkrushna, G.I., Mukherjee, A., Layek, J., Ngachan, S.V. and Buragohain, J., 2017. Impact of seven years of organic farming on soil and produce quality and crop yields in eastern Himalayas, India. *Agriculture, Ecosystems & Environment*, 236: 142-153.

17. Ansari, M.A., Choudhury, B.U., Layek, J., Das, A., Lal, R. and Mishra, V.K., 2022. Green manuring and crop residue management: Effect on soil organic carbon stock, aggregation, and system productivity in the foothills of Eastern Himalaya (India). *Soil and Tillage Research*, *218*, p.105318.

18. Ansari, M.A., Ravisankar, N., Ansari, M.H., Babu, S., Layek, J. and Panwar, A.S., 2023. Integrating conservation agriculture with intensive crop diversification in the maize-based organic system: Impact on sustaining food and nutritional security. *Frontiers in Nutrition*, *10*, p.1137247.

19. Chaudhari, D., Rangappa, K., Das, A., Layek, J., Basavaraj, S., Kandpal, B.K., Shouche, Y. and Rahi, P., 2020. Pea (Pisum sativum L.) plant shapes its rhizosphere microbiome for nutrient uptake and stress amelioration in acidic soils of the North-East region of India. *Frontiers in Microbiology*, *11*, p.968.

20. Mukherjee, S., Basak, A., Chakraborty, A., Goswami, R., Ray, K., Ali, M.N., Santra, S., Hazra, A.K., Tripathi, S., Banerjee, H. and Layek, J., 2023. Revisiting the oldest manure of India, Kunapajala: Assessment of its animal waste recycling potential as a source of plant bio-stimulant. *Frontiers in Sustainable Food Systems*, *6*, p.1073010.

21. Das, A., Layek, J., Idapuganti, R.G., Basavaraj, S., Lal, R., Rangappa, K., Yadav, G.S., Babu, S. and Ngachan, S., 2020. Conservation tillage and residue management improves soil properties under an

upland rice–rapeseed system in the subtropical eastern Himalayas. *Land Degradation & Development*, *31*(14), pp.1775-1791.

22. Babu, S., Singh, R., Avasthe, R., Rathore, S.S., Kumar, S., Das, A., Layek, J., Sharma, V., Wani, O.A. and Singh, V.K., 2023. Conservation tillage and diversified cropping enhance system productivity and eco-efficiency and reduce greenhouse gas intensity in organic farming. *Frontiers in Sustainable Food Systems*, *7*, p.1114617.

23. Yadav, G.S., Lal, R., Meena, R.S., Babu, S., Das, A., Bhowmik, S.N., Datta, M., Layak, J. and Saha, P., 2019. Conservation tillage and nutrient management effects on productivity and soil carbon sequestration under double cropping of rice in north eastern region of India. *Ecological Indicators*, 105: 303-315.

24. Das, A., Layek, J., Ramkrushna, G.I., Basavaraj, S., Lal, R., Krishnappa, R., Yadav, G.S., Babu, S. and Ngachan, S., 2020. Conservation tillage and residue management improves soil properties under a upland rice–rapeseed system in the subtropical eastern Himalayas. *Land Degradation & Development*, 31(14): 1775-1791.

25. Das, A., Lal, R., Patel, D.P., Ramkrushna, G.I., Layek, J., Ngachan, S.V., Ghosh, P.K., Bordoloi, J. and Kumar, M., 2014. Effects of tillage and biomass on soil quality and productivity of lowland rice cultivation by small scale farmers in North Eastern India. *Soil and Tillage Research*, 143: 50-58.

26. Mandal, S., Roy, S., Das, A., Ramkrushna, G.I., Lal, R., Verma, B.C., Kumar, A., Singh, R.K. and Layek, J., 2015. Energy efficiency and economics of rice cultivation systems under subtropical Eastern Himalaya. *Energy for Sustainable Development,* 28: 115-121.

27. Das, A., Layek, J.*, Ramkrushna, G.I., Patel, D.P., Choudhury, B.U., Krishnappa, R., Buragohain, J. and Yadav, G.S., 2018. Modified system of rice intensification for higher crop and water productivity in Meghalaya, India: opportunities for improving livelihoods for resource-poor farmers. *Paddy and Water Environment*, 16(1): 23-34.

28. Dutta, S.K., Layek, J., Akoijam, R.S., Boopathi, T., Saha, S., Singh, S.B. and Prakash, N., 2019. Seaweed extracts as natural priming agent for augmenting seed quality traits and yield in *Capsicum frutescens* L. *Journal of Applied Phycology*, *31*(6): 3803-3813.

29. Kumar, M., Das, A., Layek, J., Buragohain, J., Ramkrushna, G.I., Babu, S., Yadav, G.S., Krishnappa, R. and Devi, M.T., 2021. Impact of varieties and organic nutrient sources on productivity, soil carbon stocks and energetics of rice-ratoon system in Eastern Himalayas of India. *Carbon Management*, 12(2): 183-199.

30. Layek, J., Shivakumar, B.G., Rana, D.S., Munda, S., Lakshman, K., Panwar, A.S., Das, A. and Ramkrushna, G.I., 2015. Performance of soybean (*Glycine max*) intercropped with different cereals under varying levels of nitrogen. *Indian Journal of Agricultural Sciences,* 85 (12): 1551-57.

31. Jayanta Layek, Anup Das, Krishnappa R, Ramkrushna G I, Samik Chowdhury. 2021. Intensifying rice (*Oryza sativa*) based cropping system through pulses and oilseeds in North-East India, *Indian Journal of Agricultural Sciences* 91(6): 819-823.

32. Jayanta Layek, Anup Das, Ramkrushna GI, Arup Ghosh, Panwar AS, Krishnappa R and Ngachan SV. 2016. Effect of seaweed sap on germination, growth and productivity of maize (Zea mays) in North Eastern Himalayas. Indian Journal of Agronomy 61 (3): 354-359

33. Wahlang B, Das Anup, Layek J, G.C. Munda, Ramkrushna GI and A.S. Panwar. 2015. Effect of establishment methods and nutrient management on physiological attributes and water-use

efficiency of rice (Oryza sativa) in a sub-tropical climate. Indian Journal of Agronomy 60 (4): 157-163

34. Emdor Shylla, Anup Das, Ramkrushna G.I, Jayanta Layek and P.P. Ghosh. 2016. Improving soil health and water productivity of lentil (Lens esculentum) sown after lowland rice (Oryza sativa) through appropriate variety and rice residue management. Indian Journal of Agronomy 61 (3): 384-387

35. B. Ngangom, Anup Das, Ramkrushna GI and Jayanta Layek 2017. Soil properties and nutrient uptake as influenced by mulching in maize (Zea mays)-based cropping systems. Indian Journal of Agronomy 62(2):219-223

36. Santanu Das, Anup Das, Ramkrushna, Jayanta Layek, Samik Chowdhury 2017. Productivity, nutrient uptake and economics of groundnut (Arachis hypogaea)- toria (Brassica rapa subsp. dichatoma) cropping system as influenced by direct and residual effects of micronutrient and liming. Indian Journal of Agronomy 62(1):100-103

37. K. Lakshman, A.K. Vyas, B.G. Shivakumar, D.S. Rana, J. Layek and S. Munda 2016. Direct and Residual Effect of Sulphur Fertilization on Growth, Yield and Quality of Mustard in a Soybean–Mustard Cropping System. Int. J. Curr. Microbiol. App. Sci 6(5): 1500-1512

38. Das, Anup, Ramkrushna, G.I., Choudhury, B.U., Ngachan, S.V., Tripathi, A.K., Singh, R.K., Patel, D.P., Tomar, J.M.S., Mohapatra, K.P., Layek Jayanta and Munda G.C. 2014. Conservation agriculture in rice and maize based cropping systems for enhancing crop and water productivity - participatory technology demonstration in north east India. Indian Journal of Soil Conservation. 42 (1):196-203

39. Das, A., Kumar, M., Ramkrushna, G.I., Patel, D.P., Layek, J*., Panwar, A.S. and Ngachan, S.V., 2016. Weed management in maize under rainfed organic farming system. Indian Journal of Weed Science, 48(2), pp.168-172

40. Jayanta Layek, Ramkrushna GI, Dauni Suting, B. Ngangom, Krishnappa R, Utpal De and Anup Das 2016. Evaluation of Maize Cultivars for their Suitability under Organic Production System in North Eastern Hill Region of India. Indian Journal of Hill Farming. 29(2):19-24

41. Jayanta Layek, Anup Das, Arup Ghosh, Dibyendu Sarkar, Ramkrushna Gandhiji Idapuganti, Juri Boragohain, Gulab Singh Yadav, Rattan Lal. 2017. Foliar Application of Seaweed Sap Enhances Growth, Yield and Quality of Maize in Eastern Himalayas. Proceedings of the National Academy of Sciences India Section B: Biological Sci. DOI 10.1007/s40011-017-0929-x

42. Santanu Das, Anup Das, Ramkrushna GI, Jayanta Layek, and Samik Chowdhury 2016. Growth and Physiology of Groundnut as Influenced by Micronutrients and Liming in Acid Soil of North East India. Indian Journal of Hill Farming 29(2):40-47 (NAAS rating 4.39)

B. Books

1. Layek J, Das A, Ramkrushna GI, Hazarika S, Krishnappa R, Dey U, Deshmukh N, Mohapatra KP, Ravishankar N, Panwar AS, Prakash N and Kandpal BK. 2020. Integrated Organic Farming System (IOFS): A Success Story of Technology Demonstration in Cluster Approach. ICAR Research Complex for North Eastern Hill (NEH) Region, Umiam-793 103, Meghalaya, India, pp.106

2. Das. A., Layek, J., Babu, S., Ramkrushna, G.I., Baiswar, P., Krishnappa, R., Devi, M.T., Kumar, M. and Prakash, N. 2019. Package of practices for organic production of important crops in NEH Region

of India. ICAR Research Complex for North Eastern Hill (NEH) Region, Umiam – 793 103, Meghalaya, India, pp. 228.

3. Anup Das, KP Mohapatra, SV Ngachan, AS Panwar, DJ Rajkhowa, Ramkrushna GI and Jayanta Layek. Conservation Agriculture for Advancing Food Security in Changing Climate. 2018. Vol. 1. Today & Tomorrow's Printers and Publishers, New Delhi - 110 002, India, pp. 1-468.
4. Anup Das, KP Mohapatra, SV Ngachan, AS Panwar, DJ Rajkhowa, Ramkrushna GI and Jayanta Layek. Conservation Agriculture for Advancing Food Security in Changing Climate. 2018. Vol. 2. Today & Tomorrow's Printers and Publishers, New Delhi - 110 002, India**,** pp. 469-813.
5. Kadirvel, G., Choudhury, B.U., Ghatak, S., **Layek, J.,** Milton, AAP and Panwar, S. 2021. Status Report and Agenda Notes XXV Regional Committee Meeting–Zone III. ICAR Research Complex for NEH Region, Umiam, Meghalaya, pp-187.
6. K. Sethy, D. Chakraborty, R S. Rolling Anal, V. K. Verma, D. M. Firake, Jayanta Layek. 2021. CLIMATE BASED AGRO-ADVISORIES FOR MEGHALAYA under Gramin Krishi Mausam Sewa (GKMS) PME Publication no.: ICARNEH-ML-BK-2021-10

C. Technical/Extension bulletin/Training manual

1. Layek, J., Ramkrushna, G.I., Das, Anup., Ghosh, Arup., Krishnappa R., Panwar, A.S., Azad Thakur, N.S., Ngachan, S.V., Zodape, ST., Buragohain, J and Mawlong, B. 2014. Seaweed sap as organic bio-stimulant for rice and maize production. Research Bulletin no. 82, ICAR Research Complex for NEH Region, Umiam, Meghalaya, pp. 26.
2. Layek, J., Balusamy, A., Hazarika, S., Devi, S., Krishnappa, R., Mohapatra, K.P., Mandal, S., Choudhury, B.U. and Kandpal, B.K. 2020. Prospects of Bio-char for Sustainable Agriculture and Carbon Sequestration in North Eastern Hill Region of India. ICAR Research Complex for North Eastern Hill (NEH) Region, Umiam – 793 103, Meghalaya, India, pp.46.
3. Anup Das, Ramkrushna GI, Jayanta Layek, Rachna Pande, AS Panwar, Pankaj Baiswar, AK Tripathi, SV Ngachan and RM Bordoloi. 2015. Organic Farming for Sustainable Hill Agriculture.*Training Manual*. ICAR Research Complex for NEH Region, Umiam, Meghalaya, pp. 92.
4. Ngachan SV, Das Anup, Layek J, Ramkrushna GI, Panwar AS, Pande Rachna, Rajkhowa DJ, Dey Utpal, Savita and Mandal S. 2016. Pea and lentil production in rice fallow for enhancing cropping intensity, system productivity and soil quality. Technical bulletin no. 83. ICAR Research Complex for NEH Region, Umiam, Meghalaya, pp 44.
5. Das, A., Patel, D.P., Ramkrushna, G.I., Munda, G.C., Ngachan, S.V., Choudhury, B.U., Mohapatra, K.P., Rajkhowa, D.J., Kumar R. Panwar, A.S. and Layek J. 2012. Improved Rice Production Technology - for resource conservation and climate resilience (Farmers' Guide). Extension Bulletin No 80. ICAR Research Complex for NEH Region, Umiam –793 103, Meghalaya. pp. 33 (In English, Hindi and Khasi language).

D. Extension Leaflets

1. Layek J, Das A, Krishnappa R, Hazarika S, Dey U, Patra S, Kandpal B K, Mawlong LG, Nongtdu D, Tahasildar M and Prakash N. 2021. Organic Kitchen Garden for Nutrition and Livelihood Security in North Eastern Hill region of India. ICAR Research Complex for NEH Region, Umiam, Meghalaya

2. जयंत लयेक, वी.के.मिश्रा, अनूप दास, एस. हजारिका, कृष्णप्पा आर., संदीप पात्रा, धीरज कुमार पाठक, अभिषेक सिंह और राम दयाल शर्मा. भारत के उत्तर पूर्वी पहाड़ी क्षेत्र में पोषण और आजीविका सुरक्षा के लिए ऑर्गेनिक किचन गार्डन. भा.कृ.अनु.प. उत्तर पूर्वी पर्वतीय क्षेत्र अनुसंधान परिसर उमियाम, मेघालय-793103.
3. Layek J, Das A, Krishnappa R, Hazarika S, Dey U, Patra S, Kandpal B K, Mawlong L G, Nongtdu D, Tahasildar M and Prakash N. Organic Kitchen Garden for Nutrition and Livelihood Security in North Eastern Hill region of India. ICAR Research Complex for NEH Region, Umiam, Meghalaya (English & Hindi).
4. Das Anup, Ramkrushna GI, Layek J, Ngachan SV, Panwar AS and Suting D. 2016. Integrated Organic Farming System. ICAR Research Complex for NEH Region, Umiam, Meghalaya.
5. Das Anup, Layek J, Ramkrushna GI, Dey Utpal, Krishnappa R, Rajkhowa DJ and Ngachan SV. 2016. No-till Lentil Production under Rice Fallow in North Eastern Hill Region. ICAR Research Complex for NEH Region, Umiam, Meghalaya (in English and Khasi Language)
6. Das Anup, Layek J, Ramkrushna GI, Dey Utpal, Krishnappa R, Rajkhowa DJ and Ngachan SV. 2016. No-till Pea Production under Rice Fallow in North Eastern Hill Region. ICAR Research Complex for NEH Region, Umiam, Meghalaya (in English and Khasi Language)
7. A. S. Panwar, Jayanta Layek, L.L. Shivastava, Anup Das, Ramkrushna G.I., Badapmain Makdoh, Devika Jana and Vidyapati Taoram. Rice production technology (in English and Khasi Language)
8. A. S. Panwar, Jayanta Layek, L.L. Shivastava, Anup Das, Ramkrushna G.I., Badapmain Makdoh, Devika Jana and Vidyapati Taoram. Maize production technology (in English and Khasi Language)
9. A. S. Panwar, Jayanta Layek, L.L. Shivastava, Anup Das, Ramkrushna G.I., Badapmain Makdoh, Devika Jana and Vidyapati Taoram. Soybean production technology (in English and Khasi Language)
10. S. Patra, R H Sangma, H Rymnai, **J Layek**, P Baiswar, B Bhattacharjee and S Hazarika. Scientific management of Bee Hives during honey flow and dearth period.
11. S. Patra, R H Sangma, H Rymnai, **J Layek**, P Baiswar, B Bhattacharjee and S Hazarika. Scientific Extraction & Processing of Honey.

Project handled (institute/externally funded) as PI and Co-PI

Project Title	Role (PI/Co-PI)	Duration	Funded by
Externally funded			
1. Network Project on Organic farming (NPOF)	**PI**	2017 Onwards **(Ongoing)**	ICAR-IIFSR, Modipuram
2. All India Coordinated research Project on Integrated farming System (AICRP-IFS)	**PI**	2019 onwards **(Ongoing)**	ICAR-IIFSR, Modipuram
3. Evaluation of sea weed saps on performance of vegetable and groundnut under organic production system	**PI**	2015-16 **(Completed)**	CSMCRI, Bhavnagar
4. Promoting improved technology of groundnut production" in collaboration with ICAR- DGR (NEH Programme)	**PI**	2019-2021 **(Completed)**	ICAR- DGR, Junagadh
5. National Initiative on Climate Resilient Agriculture (NICRA)	**Co-PI**	Since March 2012 **(Ongoing)**	ICAR, New Delhi

6. National Mission on Sustaining the Himalayan Ecosystem - Task Force on Himalayan Agriculture (NMSHE-TF6)	**Co-PI**	Sep 2015 to Sep 2020 **Completed**	DST, GoI
7. Mitigating abiotic stress and enhancing resource use efficiency in pulses in rice fallows through innovative resource conservation practices (NSAF)	**Co-PI**	April 2012 – March 2016 **(Completed)**	NASF, ICAR
8. Standardization of nutrient requirement under different resource conservation technologies for rainfed hill agriculture	**Co-PI**	Nov 2013- April. 2016 **(Completed)**	ICAR's LBS young scientist challenge project
Institute funded			
1. Evaluation and standardization of millets production technology for nutrient and climate resilience in NEH Region	**PI**	Since Jan 2018 **(Ongoing)**	ICAR Research Complex, Umiam
2. Evaluation of different agronomic management practices for improving productivity of jhum rice	**PI**	2013-2016 **(Completed)**	ICAR Research Complex, Umiam
3. Improvement of jhum farming for natural resources conservation and livelihood security in NEH Region	**Co-PI**	2013-2016 **(Completed)**	ICAR Research Complex, Umiam

Trainings conducted as Coordinator/Course Director for technology dissemination

Title of Programme	Duration	Beneficiaries (nos.)
i. 21 Days ICAR Summer School on Conservation Agriculture for Enhancing Resource Use Efficiency and Arresting Land Degradation	21 days (19 Aug to 08 Sep, 2015)	25
ii. Training programme on "*Organic Farming for Sustainable Hill Agriculture*" for SMS (Subject Matter Specialized) from KVK (Krishi Vigyan Kendra)	8 days (16^{th} to 23^{rd} Sep, 2015)	20
iii. *Rain water harvesting for crop production, animal husbandry and fishery* on at Nonglum Village, Meghalaya	7 days (24-30 Oct, 2011)	25
iv. *Climate Resilient Agriculture* at Nongthymmai Village, Ri-Bhoi District, Meghalaya	7 days (16-22 Jan, 2012)	30
v. "*Integrated watershed management"*at ICAR Research Complex for NEH Region, Umiam.	5 days (22-26 Aug, 2017)	35
vi. "*Integrated farming system (IFS) for livelihood security and doubling of farmers income*"	3 days (12-14 Jan 2020)	38
vii. "*Integrated pest management in organic farming*" during under the Network Project on Organic Farming (NPOF).	3 days (21-23 Jan, 2019)	20
viii. *"Cultivation of mushroom in organic farming"* during under the Network Project on Organic Farming (NPOF).	3 days (28-30 Jan, 2019)	25
ix. *"Watershed based farming system of resource conservation and climate resilience" under NPCC*	3 days (4-6 March, 2013)	30
x. *"Improved groundnut production techniques"* under Groundnut Project of ICAR-DGR(NEH)	3 days (26-28 Nov, 2020)	30
xi. *"Integrated Organic farming System" for enhancing income and livelihood security"* under TSP	3 days (17-19 Dec .2020)	25

xii. "*Improved production technology of maize for enhancing productivity and profitability*" at Mawsiatkhnaan, Kyrdem and Mynsain village, Meghalaya under "Promoting improved technology of maize production in NEH Region"	3 days (22-24 June, 2020)	50
xiii. *Livelihood improvement through promotion of scientific bee keeping for the farmers of Meghalaya*" under TSP	3 days (02-04 Sep, 2021)	30
xiv. *Farmers training cum exposure visit on "Integrated farming System"*	3 days (23-25 Nov, 2021)	30
xv. "*Technological backstepping for rabi crop production through capacity building and input support system*" on der TSP at the Division of Crop Production, ICAR Research Complex for NEH Region, Umiam, Meghalaya.	1 day (14th Dec, 2017)	80
xvi."*No-till organic pulse production in rice fallows for income nad nutritional security*" on in ICAR Research Complex for NEH Region, Umiam, Meghalaya.	1 day (17th March 2018)	75
xvii."*Integrated Organic farming System for Livelihood security and Doubling of framers Income*" on at ICAR Research Complex for NEH Region, Umiam, Meghalaya	1 day (14th Nov 2018)	80
viii."*Livelihood improvement through promotion of scientific bee keeping for the farmers of Meghalaya*" under TSP	1 day (4 Sep, 2021)	40

Organized Field Days as Coordinator

Programme
i. Field Day on '*Pulse production in rice fallow'* under Tribal Sub Plan (TSP) on 10th March, 2016 at ICAR Research Complex for North Eastern Hill (NEH) Region, Umiam, Meghalaya to celebrate the International Year of Pulses 2016.
ii. Field Day on "*No-till organic pulse production in rice fallow for improving soil health and cropping intensity*" on 16th November, 2018 at village Mynsain under NPOF Project
iii. Farmer's field day *"No-till cultivation of Pea and lentil in rice fallow and IOFS"* on 25th February 2020 at ICAR Complex, Umiam
iv. Field day on "*Integrated Organic Farming System for Improving System Productivity and Profitability*" on 05th March, 2020 at Village Mynsain ICAR Complex, Umiam
v. Field Day on "*Livelihood improvement of tribal farmers of Meghalaya through minimum and no-till pulses and oilseeds cultivation on rice/maize fallow*" under TSP on 14 March 2018
vi. Field Day on '*Pulse production in rice fallow*' under TSP on 10th March, 2016 at ICAR Complex, Umiam, Meghalaya to celebrate the International Year of Pulses 2016.
vii. Field Day cum awareness programme on "*Improved production technology of crops and fish*" on 18th March 2016
viii. Field day "*Conservation agriculture*" had been successfully conducted on 6th March, 2013 at low land Agronomy field of the Institute.
ix. Field day on "*Resource conservation options for rabi crops*" on 17 March 2015
x. Field day on "*Pulse production in rice fallow*" organized on March 10, 2016

TV Talk

Done TV Talk in DD Kisan channel for telecasting of different technologies

1. Integrated organic farming system
2. No-till cultivation of pea, lentil and Rapeseed mustard crops in rice fallow

3. Raised and sunken bed land configuration for crop diversification and enhancement of cropping intensity etc.
4. No-till cultivation of French bean in in maize fallow
5. Vermicomposting for efficient recycling of wastes and use in organic farming
6. Package of practices of organic farming for North Eastern Region of India

Video Talks

A. **Organic Farming:** 20 lectures (1 hour each) on different aspects of *"Organic Farming"* at IIT Kanpur for telecasting of high-quality educational programs on a 24X7 basis using the GSAT-15 satellite. This is under the programme of Swayam Parbha Direct to Home (DTH) project under Ministry of Human Resource Development (MHRD), Govt. of India.

B. **Farming System for Sustainable Agriculture:** 20 lectures (1 hour each) on different aspects of *"Organic Farming"* at IIT Kanpur for telecasting of high-quality educational programs on a 24X7 basis using the GSAT-15 satellite. This is under the programme of Swayam Parbha Direct to Home (DTH) project under Ministry of Human Resource Development (MHRD), Govt. of India.